

PH.260 (MOLECULAR MICROBIOLOGY AND IMMUNOLOGY)

PH.260.600. Introduction to the Biomedical Sciences. 4 Credits.

Course location and modality is found on the JHSPH website (<https://www.jhsph.edu/courses/>).

PH.260.601. Vector-Borne Disease Control. 3 Credits.

The course will address various vector-borne disease control strategies that target any of the complex interactions between the pathogen, vector and host. Emphasis is placed on malaria, dengue and other arboviral diseases, as well as Chagas, leishmaniasis and schistosomiasis. Current and future prophylactic, therapeutic and transmission-blocking vaccines and drugs, vector control, and vector-targeted pathogen transmission control are some examples of control strategies that will be discussed. Interactions between control methods and factors that influence efficacy will also be addressed.

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PH.260.606. Major Global Infectious Diseases: Prospects for Control. 2 Credits.

Course location and modality is found on the JHSPH website (<https://www.jhsph.edu/courses/>).

PH.260.607. Methods in life sciences, literature and practice. 2 Credits.

Students read, present and participate in in-depth discussions of assigned papers each week. Papers for discussion are from the current scientific literature, cover a broad range of topics that are generally related to but not directly covered in their coursework. Student discussion leaders present background information and prepare written discussion questions.

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PH.260.611. Principles of Immunology I. 4 Credits.

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PH.260.612. Principles of Immunology II. 4 Credits.

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PH.260.613. Techniques in Molecular Biology. 3 Credits.

During five days of intensive hands-on laboratory instruction, students develop skills in the use of modern laboratory investigative tools in the area of molecular biology. They learn how to perform polymerase chain reaction (PCR) DNA amplification, quantitative PCR, DNA and protein gel chromatography, Western blotting, transformation of bacteria, and expression of heterologous proteins by bacteria.

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PH.260.615. Critically Reviewing the Scientific Literature. 2 Credits.

Unlike the typical literature review course, focuses specifically on literature that is flawed in the approach or methods used to examine a scientific question and examines how well the conclusions drawn are justified by the data. Oral discussions of assigned literature are accompanied by weekly 2-3 page written reviews, which provides opportunities for students to get feedback on their writing skills, as well as their critical reading skills.

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PH.260.623. Fundamental Virology. 4 Credits.

Course location and modality is found on the JHSPH website (<https://www.jhsph.edu/courses/>).

PH.260.624. Advanced Virology. 4 Credits.

Course location and modality is found on the JHSPH website (<https://www.jhsph.edu/courses/>).

PH.260.625. Scientific Grant Writing. 2 Credits.

Covers the critical components of a scientific grant application, common errors in grantsmanship and how to avoid them, grant application review criteria, ethics related to grant writing and reviewing, and identification of funding sources. Students prepare a short (5-page) draft proposal and a revision of this proposal following review. Proposal topics are selected by the students and developed with the instructor. Students also prepare critiques of other students' anonymous, instructor-edited proposals for discussion in class.

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PH.260.627. Pathogenesis of Bacterial Infections. 4 Credits.

Course location and modality is found on the JHSPH website (<https://www.jhsph.edu/courses/>).

PH.260.631. Immunology, Infection and Disease. 3 Credits.

Course location and modality is found on the JHSPH website (<https://www.jhsph.edu/courses/>).

PH.260.633. Autoimmune Diseases of the Endocrine Glands. 4 Credits.

Course location and modality is found on the JHSPH website (<https://www.jhsph.edu/courses/>).

PH.260.635. Biology of Parasitism. 5 Credits.

Presents a biological basis of parasitic lifestyles including host responses and parasite evasion of host defense mechanisms, transmission, epidemiology, diagnosis, clinical manifestations, pathology, treatment, and control of the major helminthic and protozoan infections of man

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PH.260.636. Evolution of Infectious Disease. 3 Credits.

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PH.260.650. Vector Biology and Vector-Borne Diseases. 3 Credits.

Presents the principles of transmission of human and animal pathogens by insects, mites and ticks. Covers basic arthropod biology with special attention to biological properties of vectors and their interactions with pathogens, basic components of arthropod disease cycles and principles of pathogen transmission dynamics. Special topics include emerging pathogens, vector genetics, traditional and next generation control strategies and venomous arthropods.

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PH.260.652. PRINCIPLES OF PUBLIC HEALTH ECOLOGY. 4 Credits.
Course location and modality is found on the JHSPH website (<https://www.jhsph.edu/courses/>).

PH.260.656. Malariaology. 4 Credits.
Course location and modality is found on the JHSPH website (<https://www.jhsph.edu/courses/>).

PH.260.657. Vector Biology and Disease Ecology Literature. 1 Credit.
Course location and modality is found on the JHSPH website (<https://www.jhsph.edu/courses/>).

PH.260.663. Biological Response to Biomaterials. 3 Credits.
Course location and modality is found on the JHSPH website (<https://www.jhsph.edu/courses/>).

PH.260.664. MOLECULAR ENTOMOLOGY. 2 Credits.
Course location and modality is found on the JHSPH website (<https://www.jhsph.edu/courses/>).

PH.260.665. Biological Basis of Aging. 3 Credits.
Course location and modality is found on the JHSPH website (<https://www.jhsph.edu/courses/>).

PH.260.700. How Do We Know? - Theory and Practice of Science. 3 Credits.
Examines the nature and philosophical foundations of science using an interdisciplinary approach that emphasizes critical thinking and storytelling; discusses the principles of good scientific practice – rigor, reproducibility and responsibility (the 3R's) - by exploring revolutionary discoveries in the life, public health and natural sciences; elaborates the relationship between theory, practice and serendipity in scientific discovery, and concludes with a discussion of the role of scientists in society.
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PH.260.701. Anatomy of Scientific Error. 3 Credits.
Examines sources of error in scientific practice (misconduct or honest mistakes, methodological or systematic errors). Presents real-world examples to analyze errors that cause problems in science across the disciplines. Introduces methodological and mathematical approaches to error reduction. Explores the review- and retraction mechanisms for journal articles and grants as methods of science self-correction. Discusses historic and contemporary cases where errors constitute sources of innovation.
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PH.260.704. Critical Dissection of the Scientific Literature: Taking the Scalpel to Journal Articles. 3 Credits.
Challenges the classical format of a journal club by preparing students to critically evaluate literature across the science disciplines. Acquaints students with concrete applications of the 3 R's of good scientific practice: rigor, responsibility, and reproducibility. Discusses techniques for effective research literature analysis and evaluation. Emphasizes in-depth understanding of journal article preparation, data evaluation, and the context of conclusions and discussion points within a given research field.
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PH.260.707. Evidence-Based Teaching in the Biomedical and Health Sciences: Foundations. 3 Credits.
Acquaints students interested in teaching in biomedical and health professional settings with the foundations of how adults learn as well as the science of learning. Explores practical applications of evidence-based teaching techniques most relevant to the biomedical and public health professions. Discusses a variety of assessment techniques, and their alignment with learning objectives and educational strategies using state of the art course design.
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PH.260.708. Evidence-Based Teaching in the Biomedical and Health Sciences – Practice. 3 Credits.
Provides students interested in gaining hands-on teaching experience with opportunities to plan and develop classroom materials on self-selected topics and deliver them in an interdisciplinary classroom setting, mentored by professional educators. Explores evidence-based instructional and assessment strategies to meet identified learner needs in the life and health sciences. Introduces students to a growing community of educational practitioners and scholars across the JHSPH departments and JH divisions.
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PH.260.710. Communication Practice for Health Science Professionals. 3 Credits.
Introduces students to current trends in presentation design and delivery. Focuses on narrative-oriented thinking to improve information dissemination. Emphasizes clarity and simplicity in communication practice in multiple settings, targeting both lay and interdisciplinary expert audiences.
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PH.260.711. Principles of Neuroimmunology. 3 Credits.
Course location and modality is found on the JHSPH website (<https://www.jhsph.edu/courses/>).

PH.260.712. Clinical Immunology. 3 Credits.
Course location and modality is found on the JHSPH website (<https://www.jhsph.edu/courses/>).

PH.260.713. R3 Writing Seminar for Graduate Students. 1 Credit.
Course location and modality is found on the JHSPH website (<https://www.jhsph.edu/courses/>).

PH.260.715. Unleash Your Writing Superpower: Crafting Clear, Concise and Persuasive Prose. 3 Credits.
Introduces a system of planning, organization, writing and revision. Emphasizes the importance of defining the message, audience and purpose for any piece of writing. Illuminates the basic elements of good writing. Focuses on clear, concise and persuasive writing. Explores the use of rhetoric and storytelling to maximize a piece of writing's impact. Emphasizes best practices in various forms of writing.
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PH.260.717. Graduate Immunology: the Immune Response. 3 Credits.
Course location and modality is found on the JHSPH website (<https://www.jhsph.edu/courses/>).

PH.260.720. Communications Primer for the Public Health Sciences. 1 Credit.

Acquaints students with the basics of effective oral and written communications in the form of brief exercises. Focuses on clarity and simplicity in presentation practice across disciplines and cultures to emphasize central messages. Introduces students to writing succinctly for advocacy using 'compelling writers strategies' for opinion pieces and short speeches.

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PH.260.800. MPH Capstone Molecular Microbiology and Immunology. 2 Credits.

The MPH Capstone is an opportunity for students to work on public health practice projects that are of particular interest to them. The goal is for students to apply the skills and competencies they have acquired to a public health problem that simulates a professional practice experience.

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PH.260.801. Topics in Immunology I. 1 Credit.

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PH.260.802. Topics in Immunology II. 1 Credit.

Course location and modality is found on the JHSPH website (<https://www.jhsph.edu/courses/>).

PH.260.810. Field Placement Molecular Microbiology and Immunology. 1 - 22 Credits.

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PH.260.811. Field Studies in Ecology and Behavior. 3 - 6 Credits.

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PH.260.812. The Performance of Leadership: Foundations. 2 Credits.

Explores leader and leadership as one's natural self-expression through the ontological/phenomenological model in which ontology is the study or science of the nature and function of being (as in "being a leader"), and phenomenology is the method of direct access used to study and research the nature and function of being (as in being's impact on "exercising leadership effectively"). Introduces a new conversational domain and transformative learning paradigm for leadership. Encourages discovery through discussion, exercises, and assignments. Prepares students to develop the skills necessary to create positive, effective, and sustainable change.

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PH.260.813. SURVIVAL SKILLS FOR ACADEMIA IN THE LAB SCIENCES. 2 Credits.

Aimed at providing MMI and other lab sciences with the skills necessary to present and publish data and to find post-docs and/or jobs in the laboratory sciences. Topics include time management and organization, preparing effective conference presentations, manuscripts, and curriculum vitae, networking, interviewing, and getting hired.

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PH.260.815. The Business of Academic Biomedical Research. 1 Credit.

Addresses topics related to business aspects of academic biomedical research, and focuses specifically on organizational, managerial, political, strategic and economical characteristics of academic biomedical research. Prepares students for a career in academic biomedical research by discussing essential features for success, other than the actual science.

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PH.260.820. Thesis Research Molecular Microbiology and Immunology. 1 - 22 Credits.

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PH.260.821. Research Forum in Molecular Microbiology and Immunology. 1 Credit.

Course location and modality is found on the JHSPH website (<https://www.jhsph.edu/courses/>).

PH.260.822. Seminars in Research in Molecular Microbiology and Immunology. 1 Credit.

Course location and modality is found on the JHSPH website (<https://www.jhsph.edu/courses/>).

PH.260.829. Summer Thesis Research. 12 Credits.

Course location and modality is found on the JHSPH website (<https://www.jhsph.edu/courses/>).

PH.260.830. Postdoc Research MMI. 1 - 22 Credits.

Course location and modality is found on the JHSPH website (<https://www.jhsph.edu/courses/>).

PH.260.840. SS/R: Mol Microbiology & Imm. 1 - 22 Credits.

Course location and modality is found on the JHSPH website (<https://www.jhsph.edu/courses/>).

PH.260.844. Causation. 3 Credits.

Acquaints students with fundamental ideas and historic theories about causation. Discusses how cause and effect relationships govern biomedical and public health research. Compares how sub-disciplines of the biomedical and public health sciences approach causation using concrete case examples. Addresses limitations of causal inference in biomedicine and public health. Examines strategies to mitigate the limitations of causal inference.

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PH.260.848. Implementing Community-Based Practice Through Civic Engagement Projects. 2 Credits.

Examines a participatory, online service-learning approach to enable students regardless of geographical location to engage in real-world, community-based, educational projects. Acquaint students to work with Baltimore-based community organizations through critical reflection on issues of equity and professional practice. Emphasizes the application of professional skills to real-world issues. Discusses the limitations and ethical aspects inherent to civic engagement work. Prepares students to develop evaluation plans and materials for the organizations' identified programs. Emphasizes translation of experiences with Baltimore Community-based organizations into local contexts. Focuses on building reciprocal partnerships that reach beyond "consultancy."

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PH.260.851. Laboratory Rotations. 4 - 8 Credits.

All departmental Sc.M. and doctoral students spend one and three terms, respectively, participating in the research activities of departmental faculty's laboratories. Students select appropriate rotations in consultation with their academic advisors and the departmental Graduate Program Committee.

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PH.260.852. Molecular Biology Literature. 2 Credits.

Course location and modality is found on the JHSPH website (<https://www.jhsph.edu/courses/>).

PH.260.854. Current Literature in Microbial Immunity. 1 Credit.

Reviews and discusses, in depth, current publications in the field of microbial immunity, with emphasis on the areas of innate/adaptive immunity, pathogenesis, and vaccination

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PH.260.855. Pandemics of the 20Th Century. 1 Credit.

Focuses on major pandemics in the human population that have occurred in the 20th century: the 1918 influenza pandemic; the emergence of HIV; the severe acute respiratory distress syndrome (SARS) outbreak of 2002-03; and viral hepatitis (hepatitis B and C viruses). For each pandemic, discussion groups cover a clinical-, public health- and pathogen-oriented reading topic in order to give students a broad understanding of the overall importance of each, as well as to compare and contrast the key aspects of each disease. Focuses on acute and chronic diseases, as well as diseases with different routes of transmission and incubation times between infection and disease. Provides a comprehensive overview of how each pandemic emerged, what key factors dictated spread in the population, and how each pathogen induced disease.

Course location and modality is found on the JHSPH website (<https://www.jhsph.edu/courses/>).

PH.260.895. MPH Practicum: MMI. 1 - 4 Credits.

Course location and modality is found on the JHSPH website (<https://www.jhsph.edu/courses/>).

PH.260.935. Lab for MMI 260.635. 3 Credits.

Laboratory sessions examine living and preserved parasites, gross pathology, histopathology, and vectors. Journal discussions based on research papers and topics of fundamental importance to parasitology will involve student participation in a seminar format.

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