Division of Medical Sciences
Ph.D. Programs at Harvard Medical School

First Meeting of Half Courses
Spring Term 2018-2019

Classes Start: Monday, January 28, 2019

Online Check-In: Wednesday, January 23, 2019 – Monday, January 28, 2019
Please visit the Harvard University Knowledge Center website for more information

Deadlines and Holidays: Please visit the GSAS Calendar to view deadlines and holidays for the 18-19 academic year

For information: Call 617-432-4134 or email dms_courses@hms.harvard.edu
DIVISION OF MEDICAL SCIENCES  
Ph.D. Programs at Harvard Medical School  
2018-2019 Spring Term Course Offerings

**BCMP 213 Behavioral Pharmacology**  
Jack Bergman and Brian Kangas

**BCMP 234 Cellular Metabolism and Human Disease**  
Thomas Michel, Bruce Levy, David Cohen, D. Branch Moody, Joseph Loscalzo, Raul Mostoslavsky, Sudha Bidding, Marcia Haigis, Paul Schmidt, Vijay Sankaran, Lisa Henske, Joseph Majzoub, Mark Puder and Lynn Bry  
Curriculum Fellow: Brittany Michel

**BCMP 236 Modern Drug Discovery: From Principles to Patients**  
Timothy Mitchison and Catherine Dubreuil

**BCMP 250 Biophysical and Biochemical Mechanism of Protein Function**  
*Enrollment: Limited to 40*  
Andrew Kruse, Stephen Blacklow, Phil Cole and Eric Fischer  
Curriculum Fellow: Madhvi Venkatesh

**Cell Biology 201 Principles of Cell Biology**  
Adrian Salic, Susan Shao, Timothy Mitchison, Daniel Finley, Adrian Salic, David Van Vactor, Brendan Manning, Joan Brugge, Wade Harper, Senthil Muthaswamy, Alan Brown, Sanja Sever, John Hanna, Ed Chouchani, Maofu Liao, Marcia Haigis, Pere Puigserver, Steve Gygi, Jennifer Waters, Marc Kirschner, Jack Szostak  
Curriculum Fellow: Seth Johnson

**Cell Biology 207 Vertebrate Developmental and Regenerative Biology**  
*Enrollment: Limited to 18.*  
Andrew Lassar, John G. Flanagan, Jordan Kreidberg; Sean Megason; Olivier Pourquie; Jessica Lehoczky and Guillermo Garcia-Cardena

**Cell Biology 212 Biology of the Cancer Cell: From Molecular Mechanisms to Therapeutic Implications**  
*Enrollment: Limited to 32*  
Frank David, Matthew Meyerson, Bill Kaelin, Huma Rana, Frank Slack, Matt Freedman, Alan D'Andrea, Alice Shaw, Alex Toker, Kevin Haigis, Jon Aster, Carla Kim, Julie Losman, Cathy Wu, Sandy McAllister, Loren Walensky, Eli Van Allen and Rizwan Haq  
Curriculum Fellow: Ryan Lee

**Genetics 216 Advanced Topics in Gene Expression**  
*Enrollment: Limited to 16*  
Fred Winston, Robert Kingston, and Stephen Buratowski

**Genetics 228 Genetics in Medicine - From Bench to Bedside**  
*Enrollment: Limited to 35*  
David Sweetser

**HBTM 200 Pathology of Human Disease**  
Scott Lovitch

**Immunology 202 Immune and Inflammatory Diseases**  
Filip Swirski and Mikael Pittet
**Immunology 204 Critical Readings for Immunology**  
Duane Wesemann

**Immunology 301 Immunology Seminar**  
*Enrollment: Limited to 20.*  
Galit Alter and Shiv Pillai

**Microbiology 201 Molecular Biology of the Bacterial Cell**  
David Rudner, Thomas Bernhardt and Simon Dove  
Curriculum Fellow: Deepali Ravel

**Microbiology 210 Microbial Sciences: Chemistry, Ecology, and Evolution**  
*Enrollment: Limited to 20*  
Michael Gilmore

**Microbiology 213 Social Issues in Biology**  
*Enrollment: Limited to 18.*  
Jonathan Beckwith, Angela DePace, Stephen Lory, Richard Born, Nancy Krieger, Johnny Kung pgEd, Vicki Dzindzichashvili and David Glass

**Neurobiology 215B The Discipline of Neuroscience**  
Lisa Goodrich, John Assad, Sandeep Robert Datta, Rosalind Segal, Michael Do, David Corey, Rachel Wilson, Richard Born, Jan Drugowitsch, Christopher Harvey, Mark Andermann, Beth Stevens, Dan Polley and Charles Weitz  
Curriculum Fellow: Taralyn Tan

**SHBT 202 Clinical Aspects of Speech and Hearing**  
*Enrollment: Limited to 15*  
Konstantina Stankovic  
Teaching Assistant: Jessica Sagers

**SHBT 205 Neural Coding and Perception of Sound**  
*Enrollment: Limited to 20*  

**Virology 201 Virology**  
*Enrollment: Limited to 20*  
Ben Gewurz, James Cunningham, Aaron Schmidt Joe Sodroski, Dan Kuritzkes and Sun Hur
**BCMP 213 Behavioral Pharmacology**
Jack Bergman and Brian Kangas

4 units

T 3:00PM – 5:45PM

Introduction to behavioral pharmacology of CNS drugs (e.g., psychomotor stimulants, antischizophrenics, opioid analgesics, antianxiety agents); seminar format with emphasis on behavioral methodology (i.e., model and assay development) and pharmacological analysis (i.e., receptor selectivity and efficacy); attention to tolerance, drug dependence/addiction/treatment, and basic behavioral processes.

Course Notes: Offered jointly with the Medical School as BP 719.0. 1 year biology or chemistry or 1 year psychology recommended.

**Spring 2019**
**First Meeting:** January 29, 2019
**Final Meeting:** May 7, 2019
**Location:** TBD
**Course Heads:** Jack Bergman, jack_bergman@hms.harvard.edu and Brian Kangas, bkangas@mclean.harvard.edu
BCMP 234 Cellular Metabolism and Human Disease
Thomas Michel, Bruce Levy, David Cohen, D. Branch Moody, Joseph Loscalzo, Raul Mostoslavsky, Sudha Biddinger, Marcia Haigis, Paul Schmidt, Vijay Sankaran, Lisa Henske, Joseph Majzoub, Mark Puder and Lynn Bry

4 units

MWF 9:00AM – 10:20AM

Cellular and organismal metabolism, with focus on interrelationships between key metabolic pathways and human disease states. Genetic and acquired metabolic diseases and functional consequences interactive lectures and critical reading conferences are integrated with clinical encounters;

Course notes: Enrollment may be limited. Open to all HILS graduate students with adequate preparation in cell biology and biochemistry. For undergraduates only: Knowledge of introductory biochemistry, genetics, and cell biology required (MCB 63 or MCB 60 or LIFESCI150, and MCB 64 or equivalent); plus one year of organic chemistry (Chem 17/27 or 20/30).

Spring 2019
First Meeting: Monday, January 22, 2019
Final Meeting: Wednesday, May 2, 2019
Location: Cannon Room, Building C
Course Head: Thomas Michel, Thomas_Michel@hms.harvard.edu
Curriculum Fellow: Brittany Michel, Brittany_Michel@hms.harvard.edu
BCMP 236 Modern Drug Discovery: From Principles to Patients
Timothy Mitchison, and Catherine Dubreuil

4 Units

Tue and Th 3:30-5:00

This course will familiarize students with central concepts in drug action and therapeutics: specifically we will cover concepts surrounding Pharmacokinetics (PK) and the intersection of PK and medicinal chemistry in both lectures and cases based discussions. These concepts are central to modern drug development and evaluation. In the course we will cover drug-target interactions, Pharmacokinetics and Pharmacodynamics. This course will have a focus on modern approaches to therapeutic development for small molecules, protein based therapeutics, nucleic acid based drugs and antibacterial compounds as well new frontiers in therapeutic discovery.

Course Notes: This course is the combination of the BCMP 309qc and 307qc quarter courses, offered as half course. Students who plan to take the two quarters must sign up under BCMP 236.

Spring 2019
First Meeting: January 28, 2019
Final Meeting: May 2, 2019
Location: TMEC 106
Course Heads: Timothy Mitchison, timothy_mitchison@hms.harvard.edu and Catherine Dubreuil catherine_dubreuil@hms.harvard.edu
Biophysical and Biochemical Mechanisms of Protein Function focuses on the molecular mechanisms that underlie essential biochemical processes such as signal transduction. Major topics include biochemical thermodynamics and conformational equilibria, protein structure and folding, receptor pharmacology, allostery, and enzymatic mechanisms of signaling. The course includes both content lectures and research frontiers seminars focused on current research in biochemistry with an emphasis on signal transduction in therapeutically relevant pathways.

Course Note: A foundational biochemistry course is recommended as a prerequisite (we expect students to have a solid understanding of the core concepts in biochemistry and molecular biology, including knowledge of the amino acids and their properties as well as the central dogma).

Spring 2019
First Meeting: Tuesday, January 29, 2019
Final Meeting: Tuesday, April 30, 2019
Location: SGM 106
Course Heads: Andrew Kruse, andrew_kruse@hms.harvard.edu
Course Instructors: Andrew Kruse, Andrew_kruse@hms.harvard.edu, Stephen Blacklow, stephen_blacklow@hms.harvard.edu, Phil Cole, pacole@bwh.harvard.edu and Eric Fischer, eric_fischer@hms.harvard.edu
Curriculum Fellow: Madhvi Venkatesh, Madhvi_Venkatesh@hms.harvard.edu
Cell Biology

**Cell Biology 201 Principles of Cell Biology**
Adrian Salic, Susan Shao, Timothy Mitchison, Daniel Finley, Adrian Salic, David Van Vactor, Brendan Manning, Joan Brugge, Wade Harper, Senthil Muthaswamy, Alan Brown, Sanja Sever, John Hanna, Ed Chouchani, Maofu Liao, Marcia Haigis, Pere Puigserver, Steve Gygi, Jennifer Waters, Marc Kirschner, Jack Szostak

Units 4

Lectures: Mon, Wed, and Fri 10:30-12:00

Discussion Sections: Fri at 10:30-12:00

CB201 is a graduate level course intended to teach critical concepts in cell biology, and expose students to current and quantitative approaches in cell biology research. Topics include the molecular basis of cellular dynamics, subcellular compartmentalization, protein trafficking, chromosome biology and epigenetics, regulated ubiquitin-proteasome pathways, cell cycle regulation, cytoskeleton and motor dynamics, signal transduction, cell-cell interactions, and programmed cell death.

Methodological focus on current approaches in cell biology including quantitative tools. Emphasis on experimental design. Offered jointly with the Medical School as CB 713.0

Basic knowledge in biochemistry, genetics and cell biology.

**Spring 2019**
**First Meeting:** Monday January 28, 2019
**Final Meeting:** Wednesday May 1, 2019
**Location:** Cannon Room
**Course Head:** Adrian Salic, adrian_salic@hms.harvard.edu
**Curriculum Fellow:** Seth Johnson, Seth_Johnson@hms.harvard.edu
Cell Biology 207 Vertebrate Developmental and Regenerative Biology
Andrew Lassar, John G. Flanagan, Jordan Kreidberg; Sean Megason; Olivier Pourquie; Jessica Lehoczky and Guillermo Garcia-Cardena

4 Units

Enrollment: Limited to 18, instructor consent required.

Lecture: Mon and Wed 2:00-4:00

Analyzes the developmental programs of frog, chick, zebrafish, and mouse embryos, emphasizing experimental strategies for understanding the responsible molecular mechanisms that pattern the vertebrate embryo. Signaling pathways controlling morphogenesis, organogenesis, stem cells and regeneration will be discussed in detail.

Course Notes: Offered jointly with the Medical School as CB 710.0. Includes lectures and conference sessions in which original literature is discussed in depth. Short research proposals are required in lieu of exams.

Spring 2019
First Meeting: Monday, January 28, 2019
Final Meeting: Wednesday, May 15, 2019
Location: Armenise 527
Course Head: Andrew Lassar, andrew_lassar@hms.harvard.edu and John Flanagan flanagan@hms.harvard.edu
This semester long course takes a molecular approach to examine the basis of human cancer. The main concepts that we will cover include: cancer genetics and epigenetics, tumor suppressor genes and oncogenes, signal transduction, DNA damage and repair, angiogenesis, metastasis and invasion, apoptosis, cancer stem cells, and tumor immunology and immunotherapy. Lectures will be delivered by experts in the various fields to provide an integrated perspective on past, current and future approaches in cancer biology research. Many of the lecturers are also clinical oncologists and hematologists, who will provide insight into how molecular advances are impacting patient care now, and are likely to do so in the future. In addition, students will participate in workshops in which they will delve more deeply into the primary literature of several of these topics.

Course Notes: Given alternate years with Cell Biology 211. Advanced biochemistry, molecular genetics, and cell biology.

Spring 2019
First Meeting: January 28, 2019
Final Meeting: May 1, 2019
Location: TMEC 106
Course Head: David Frank, David_Frank@dfci.harvard.edu
Curriculum Fellow: Ryan Lee, Ryan_Lee@hms.harvard.edu
Genetics 216 Advanced Topics in Gene Expression
Fred Winston, Robert Kingston, and Stephen Buratowski

4 Units

Enrollment: Limited to 16, instructor consent required.

Tue 2:00-5:00

This course covers different topics in gene regulation, covering genetic, genomic, biochemical, and molecular approaches. A small number of topics are discussed in depth, using the primary literature. Topics range from prokaryotic transcription to eukaryotic development.

Course Notes: Offered jointly with the Medical School as GN 703.0.

Prerequisite: Genetics 201 and BCMP 200 or equivalent. All students taking Genetics 216 should read and be prepared to discuss the papers for the first meeting on January 29. The readings can be downloaded from the course web site.

Spring 2019
First Meeting: Tuesday, January 29, 2019
Final Meeting: Tuesday, May 7, 2019
Location: TMEC L-008
Course Head: Fred Winston, winston@genetics.med.harvard.edu
Course Instructors: Robert Kingston, kingston@molbio.mgh.harvard.edu, and Stephen Buratowski, steve_buratowski@hms.harvard.edu
Genetics 228 Genetics in Medicine - From Bench to Bedside

David Sweetser

4 Units

Enrollment: Limited to 35, instructor consent required if you haven’t taken Genetics 201 or equivalent

Fri 2:00-5:00

Focus on translational medicine: the application of basic genetic discoveries to human disease. Each three-hour class will focus on a specific genetic disorder and the approaches currently used to speed the transfer of knowledge from the laboratory to the clinic. Each class will include a clinical discussion, a patient presentation if appropriate, followed by lectures, a detailed discussion of recent laboratory findings and a student led journal club. Lecturers will highlight current molecular, technological, bioinformatics and statistical approaches that are being used to advance the study of human disease. There is no exam. Students will present one paper per session in a journal club style. Attendance and active participation for the duration of all class meetings is required. If you are unable to attend class, or cannot be present for the entire session you are expected to contact the course instructor. Two incomplete or missed sessions will result in a failing grade. Please do not sign up if you know you will have to miss 2 or more sessions. For more information visit https://ecor.mgh.harvard.edu/Default.aspx?node_id=375

Course Notes: Course will be held at MGH (transportation provided to MGH). Offered jointly with the Medical School as GN 711.0. Dental students should cross register for Genetics 228 on my.harvard to receive updated assignments and readings.

Recommended Prep: Genetics 201 or equivalent. Dental students should email course instructor dsweetser@mgh.harvard.edu for permission to enroll, including a description of their prior formal genetics training.

Spring 2019
First Meeting Date: Friday, February 1, 2019
Final Meeting Date: Friday, April 26, 2019
Location: Simches Research Center, MGH 3rd floor, Room 3120(Transportation will be provided from Vanderbilt Hall at 1:30pm)
Course Head: David Sweetser, DSWEETSER@mgh.harvard.edu
**HBTM 200: Pathology of Human Disease**  
*Scott Lovitch*

4 Units

Tue 9:00-11:00 and Th 9:00-1:00

This course provides a comprehensive overview of human pathology with emphasis on mechanisms of disease and modern diagnostic technologies. Topics include (1) general mechanisms of disease (inflammation, infection, immune injury, host response to foreign materials, transplantation, genetic disorders and neoplasia), (2) pathology of major organ systems, and (3) review of diagnostic tools from invasive surgical pathology to non-invasive techniques such as diagnostic imaging and molecular pathology. The objectives of this course are achieved through a set of integrated lectures and laboratories, as well as a student-driven term project leading to a formal presentation on a medical, socioeconomic, or technological issue in human pathology.

**Course Notes:** Enrollment may be limited. Jointly offered with HMS as HT035.0.

**Prerequisites:** General biology.

**Spring 2019**  
**First Meeting:** Tuesday, February 5, 2019  
**Final Meeting:** Thursday, May 16, 2019  
**Location:** TMEC 227  
**Course Head:** Scott Lovitch, slovitch@bwh.harvard.edu  
**Course Website:** [https://canvas.harvard.edu/courses/50807](https://canvas.harvard.edu/courses/50807)
**Immunology**

**Immunology 202 Immune and Inflammatory Diseases**  
*Filip Swirski and Mikael Pittet*

4 Units

Tue and Th 1:30-4:00 (Lecture: 1:30-2:30 Break: 2:30-2:45 Discussion: 2:45-4:00)

IMM202 builds on IMM201 and explores fundamental principles of immunology in the context of immune and inflammatory diseases. Through a series of lectures and discussion, students will survey a broad range of diseases in which the immune system is essential. Topics will include not only diseases that mobilize classical immunity but also conditions to which we now know the immune systems contributes. Students will use oral and written exercises to learn how to evaluate and synthesize major concepts and tools germane to immunology’s relationship to bioscience.

**Course Notes:** Offered jointly with the Medical School as IM 712.0.

**Prerequisite:** Immunology 201 or its equivalent.

**Spring 2019**  
**First Meeting:** Tuesday, January 29, 2019  
**Final Meeting:** Thursday, May 9, 2019  
**Location:** Jeffery Modell Immunology Center, Room 100  
**Course Co-Heads:** Filip Swirski, fswirski@mgh.harvard.edu, and Mikael Pittet, mpittet@mgh.harvard.edu
Immunology 204 Critical Readings for Immunology  
_Duane Wesemann_

4 Units

Th 10:00-1:00

Original research articles from fields including immunology, biochemistry, genetics, and cell and developmental biology will be critically analyzed in an intensive small group format. Grading will be based on class participation and oral presentations.

**Course Notes:** Required for first-year immunology students, open to second-year immunology students. No auditors. Offered jointly with the Medical School as IM 703.0.

**Spring 2019**  
**First Meeting:** Thursday, January 31, 2019  
**Final Meeting:** Thursday, May 2, 2019  
**Location:** Jeffery Modell Immunology Center, Room 100  
**Course Head:** Duane Wesemann, dwesemann@bwh.harvard.edu

Immunology 301 Immunology Seminar  
_Galit Alter and Shiv Pillai_

4 Units

Enrollment: Limited to 20, instructor consent required.

Wed 3:30-5:00

Gives students exposure to research topics in Immunology. Students prepare for the weekly seminar through readings, discussions, and preparing brief write-ups. These discussions are facilitated by members of the Committee on Immunology.

Course Note: Required for, and limited to, first-year Immunology graduate students. All others will be evaluated for enrollment on a case by case basis.

**Spring 2019**  
**First Meeting:** Wednesday, January 30, 2019  
**Final Meeting:** Wednesday, May 2, 2019  
**Location:** Jeffery Modell Immunology Center, Room 100  
**Course Head:** Shiv Pillai, pillai@helix.mgh.harvard.edu
Microbiology

Microbiology 201 Molecular Biology of the Bacterial Cell
David Rudner, Thomas Bernhardt and Simon Dove

4 Units

Tue and Th 10:00-12:00

This course is devoted to bacterial structure, physiology, genetics, and regulatory mechanisms. The class consists of lectures and group discussions emphasizing methods, results, and interpretations of classic and contemporary literature.

Spring 2019
First Meeting: Tuesday, January 29, 2019
Final Meeting: Tuesday, April 30, 2019
Location: NRB 1031
Course Head: David Rudner, rudner@hms.harvard.edu, Thomas Bernhardt, thomas_bernhardt@hms.harvard.edu
Course Instructors: Simon Dove, simon.dove@childrens.harvard.edu,
Curriculum Fellow: Deepali Ravel, Deepali_Ravel@hms.harvard.edu
Microbiology 210 Microbial Sciences: Chemistry, Ecology, and Evolution
Michael Gilmore

4 Units

Enrollment: Limited to 20

Fri 8:30-11:45 (Lecture 8:30-9:30; Discussion 9:45 – 11:45)

This is an interdisciplinary graduate-level and advanced undergraduate-level course in which students explore topics in molecular microbiology, microbial diversity, and microbially-mediated geochemistry in depth. This course will be taught by faculty from the Microbial Sciences Initiative. Topics include the origins of life, biogeochemical cycles, microbial diversity, and ecology.

**Course Notes:** Also offered as Organismic and Evolutionary Biology 290.

**Prerequisite:** For graduate and advanced undergraduate students, Life Sciences 1a and 1b or their equivalent are required, or permission of instructor. MCB 52 or equivalent is recommended.

**Spring 2019**
**First Meeting:** Friday, February 1, 2019
**Final Meeting:** Friday, April 26, 2019
**Location:** Harvard Natural History Museum 24 Oxford St., Cambridge, MA
**Course Head:** Michael Gilmore, michael_gilmore@meei.harvard.edu
**Course Instructors:** Michael Gilmore
Microbiology 213 Social Issues in Biology
Jonathan Beckwith, Angela DePace, Stephen Lory, Richard Born, Nancy Krieger, Johnny Kung
pgEd, Vicki Dzindzichashvili and David Glass

4 Units

Enrollment: Limited to 18, instructor consent required.

Th 2:00-5:00

This discussion course covers historical and contemporary readings about controversial issues related to biology and social responsibility of scientists. The topics are selected from amongst the following: Scientific racism as a determinant of population health inequities; Eugenics: past, present and future; Reproducibility, probability and truth in science; Pros and cons of DNA use in forensics; Social activism in science; Women and minorities in science; Science communication to the public(s); Controversies in biology and medicine re: issues of race, ethnicity and gender; The course can provide future scientists with a background in anticipating and considering present and future ethical and social implications of biology.

Course Notes: Offered jointly with the Medical School as MG 722.0. Alternates yearly between the Longwood and the Cambridge Campuses.

Prerequisite: Some background in genetics.

Spring 2019
First Meeting: Thursday, February 7, 2019
Final Meeting: Thursday, April 25, 2019
Location: NRB 833
Course Head: Jonathan Beckwith, jbeckwith@hms.harvard.edu
Neurobiology

Neurobiology 215B. The Discipline of Neuroscience
Lisa Goodrich, John Assad, Sandeep Robert Datta, Rosalind Segal, Michael Do, David Corey, Rachel Wilson, Richard Born, Jan Drugowitsch, Christopher Harvey, Mark Andermann, Beth Stevens, Dan Polley and Charles Weitz

Enrollment Limited to 30; Instructor consent required

4 units

T., Th., 9:00AM – 12:00PM

This course will endow students with the broad conceptual fluency in the discipline of neuroscience required to relate genes to circuit function, metabolism to neurological disease, and cell biology to neural computations. Through a combination of lectures and in-class activities, students will learn to design, quantitatively analyze, and interpret experiments that address a variety of questions spanning molecular to systems neuroscience. During the first semester, students will think critically about the fundamental units of the nervous system within the context of cellular function, electrical conduction, and chemical signaling. The second half of the course builds upon this foundation to focus on broadly defined “networks of neural function” as related to coordinated neural activity, the concerted execution of genetic programs, and anatomically defined structural networks. The course culminates with students writing a grant proposal.

Course Note: Full year course (students may not enroll for the second semester unless they have completed the first semester; however, students could elect to take just the first semester. Students must successfully complete 1st semester of course (NB215A)

Spring 2019

Meeting Dates: January 29, 2019 through May 16, 2019
First Meeting Location: WAB 236
Course Head: Lisa Goodrich, lisa_goodrich@hms.harvard.edu and John Assad, john_assad@hms.harvard.edu
Curriculum Fellow: Taralyn Tan, Taralyn_Tan@hms.harvard.edu
SHBT 202 Clinical Aspects of Speech and Hearing
Konstantina Stankovic

4 Units

Mon and Wed 5:00 -7:00 pm

Clinical approach to speech and hearing disorders as practiced by physicians, audiologists, speech clinicians, rehabilitation specialists, and bioengineers. Includes observation of patient care in clinic and operating rooms, as well as lectures, discussion groups, and laboratory experience in audiological and vestibular testing.

Course Notes: Offered jointly with HST 724 at MIT. Classes to be held at Massachusetts Eye and Ear (MEE).

Recommended Prep: Anatomy of Speech and Hearing, Acoustics of Speech and Hearing or permission of the course director.

Spring 2019
First Meeting Date: Monday January 28, 2019
Final Meeting Date: Monday April 22, 2019
Location: Eaton-Peabody Laboratories, Massachusetts Eye and Ear, 4TH Floor
Course Head: Konstantina Stankovic, konstantina_stankovic@meei.harvard.edu
Teaching Assistant: Jessica Sagers, jsagers@g.harvard.edu
SHBT 205 Neural Coding and Perception of Sound

4 Units

Enrollment: Limited to 20, instructor consent required.

Mon, Wed and Fri 9:30-11:30

Neural structures and mechanisms mediating the detection, localization and recognition of sounds. General principles are conveyed by theme discussions of auditory masking, sound localization, musical pitch, cochlear implants, cortical plasticity and auditory scene analysis.

Course Notes: Offered jointly with MIT HST.723J.

Prerequisite: Neurobiology 200 or permission of instructor

Spring 2019
First Meeting: Monday, January 28, 2019
Final Meeting: Wednesday, May 1 2019
Location: Massachusetts Eye & Ear, 4th floor Conference Room
Course Head: Joshua McDermott, jhm@mit.edu Daniel Polley, daniel_polley@meei.harvard.edu
Course Instructors: Bertrand Delgutte, bertrand_delgutte@meei.harvard.edu, M. Christian Brown, chris_brown@meei.harvard.edu
Virology 201 Virology  

*Ben Gewurz, James Cunningham, Aaron Schmidt, Joe Sodroski, Dan Kuritzkes and Sun Hur*

4 Units

Enrollment: Limited to 20

Mon and Wed 2:30-4:00pm

The course focuses on the following areas of virology: (i) epigenetic regulation, (ii) RNA virus replication mechanisms, (iii) innate responses to viral infection and (iv) inhibition of viral infection. The course will comprise lectures as well as reviewing literature that describes fundamental breakthroughs relevant to these areas. Within those areas, the class will read and discuss papers dealing with virus structure, replication, pathogenesis, evolution, emerging viruses, chronic infection, innate and adaptive immunity, anti-viral drugs/vaccines. Special emphasis will be placed on preparing students to critically evaluate the literature, formulate hypotheses and design experiments.

**Course Notes:** Course format will be lectures, literature-based critical reading and discussion. Prepare and defend a written research proposal. Offered jointly with the Medical School as MG 723.0.

**Prerequisite:** Virology 200, graduate standing and permission required.

**Spring 2019**

**First Meeting:** Monday, January 21, 2019  
**Final Meeting:** Wednesday, May 6, 2019  
**Location:** TMEC 304  
**Course Head:** Ben Gewurz, bgewurz@partners.org  
**Course Instructor:** James Cunningham, jcunningham@rics.bwh.harvard.edu
COURSES NOT OFFERED THIS SPRING 2019

**Cell Biology 211 Molecular Systems Level Cancer Cell Biology**  
Peter Sicinski and Jarrod Marto

**Genetic 219 Inheritance and Weird Stuff**  
Chaoting Wu

**Genetic 202 Human Genetics**  
Curriculum Fellow: Rachel Wright

**Neurobio 209 Neurobiology of Disease**  
Edward Kravitz and Patricia Musolino