

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

First Meeting of Courses

Fall Term 2014-2015

Study Card Days:

Held at the Harold Amos Graduate Student Lounge, TMEC Room 442

G3's and above: **Thursday, September 4**

G1's and G2's: **Friday, September 5**

Final day to turn in Study Cards to Cambridge in Dudley House: **Tuesday, September 9**

Add Course Deadline: Monday, October 20, 2014

Drop Course Deadline: Tuesday, October 28, 2014

Holidays:

Columbus Day: Monday, October 13

**Classes will be held on Veteran's Day

[Online Registration](#): August 18-27, 2014

For information: Call **617-432-4134** or email **dms_courses@hms.harvard.edu**

DIVISION OF MEDICAL SCIENCES
Ph.D. Programs at Harvard Medical School
2014-2015 Fall Term Course Offerings

BBS 230 (formerly Microbiology 230). Analysis of the Biological Literature

Catalog Number: 36968

Michael Demian Blower (Medical School) and Adrian Salic (Medical School)

***BBS 301. Teaching Practicum**

Catalog Number: 77888

David L. Van Vactor (Medical School) 2089 and members of the Departments

BBS 330 (formerly Genetics 330). Critical Thinking and Research Proposal Writing

Catalog Number: 36741

Monica P. Colaiácovo (Medical School) 4949 and members of the Medical School Faculty.

BCMP 200. Molecular Biology

Catalog Number: 5591

Joseph John Loparo (Medical School), Paul J. Anderson (Medical School), Lee Stirling Churchman (Medical School), Shobha Vasudevan (Medical School), Johannes Walter (Medical School), and Timur Yusufzai (Medical School) and other members of the Departments

***BCMP 218. Molecular Medicine**

Catalog Number: 2049 Enrollment: Limited to 35.

George Q. Daley (Medical School), David E. Cohen (Medical School), and Irving M. London (Medical School)

BCMP 228. Macromolecular NMR

Catalog Number: 3969

Gerhard Wagner (Medical School), James J. Chou (Medical School), Haribabu Arthanari (Medical School), Kirill Oxenoid (Medical School) and members of the NMR lab

BCMP 230. Principles and Practice of Drug Development

Catalog Number: 1295

Lee L. Rubin and Stan Neil Finkelstein (Medical School)

Cell Biology 226. Concepts in Development, Self-Renewal, and Repair

Catalog Number: 8747 Enrollment: Limited to 12.

Iain A. Drummond (Medical School) and Amar Sahay (Medical School)

Genetics 201. Principles of Genetics

Catalog Number: 4225

Fred Winston (Medical School), Thomas G. Bernhardt (Medical School), Maxwell G. Heiman (Medical School), Mitzi I. Kuroda (Medical School), and Steven A. McCarroll (Medical School)

Genetics 220. Molecular Biology and Genetics in Modern Medicine

Catalog Number: 4660

Kiran Musunuru (Medical School)

HBTM 235 (formerly BCMP 235). Principles of Human Disease: Physiology and Pathology

Catalog Number: 82892

Constance L. Cepko (Medical School), and members of the Medical School Faculty

***Immunology 201. Principles of Immunology**

Catalog Number: 8337 Enrollment: Limited to 50.

Ulrich H. Von Andrian (Medical School), Thorsten Mempel (Medical School) and members of the Program in Immunology

***Immunology 301. Immunology Seminar**

Catalog Number: 4971 Enrollment: Limited to 20.

Michael C. Carroll (Medical School) 2050 and William Nicholas Haining (Medical School) 6946

***Medical Sciences 250ab. Human Functional Anatomy**

Catalog Number: 6946 Enrollment: Limited to 52. This course requires rental of a locker.

Lee Gehrke (Medical School)

***Microbiology 205. Mechanisms of Microbial Pathogenesis**

Catalog Number: 2480 Enrollment: Limited to 40.

Clyde S. Crumpacker II (Medical School) and members of the Department

Microbiology 214. Mechanisms of Bacterial Pathogenesis and Host Immune Response – (New Course)

Catalog Number: 37145

Marcia Goldberg (Medical School) 3783, Michael Starnbach (Medical School) 1816, and Jon Kagan (Medical School)

Neurobiology 200. Neuroscience

Catalog Number: 6062 Enrollment: Limited to 50.

John A. Assad (Medical School), Matthew P. Frosch (Medical School), Jeffrey R. Holt (Medical School), Rosalind A. Segal (Medical School), and Ziv Williams (Medical School)

***Neurobiology 220. Cellular Neurophysiology**

Catalog Number: 2141

Bruce P. Bean (Medical School), Wade G. Regehr (Medical School), Bernardo L. Sabatini (Medical School), and Gary I. Yellen (Medical School)

Neurobiology 230. Visual Object Recognition

Catalog Number: 78454

Gabriel Kreiman (Medical School)

SHBT 200. Acoustics of Speech and Hearing

Catalog Number: 60388 Enrollment: Limited to 20. Must have a minimum of 5 students

John J. Rosowski (Medical School) and Christopher A. Shera (Medical School)

SHBT 201. Biology of the Inner Ear

Catalog Number: 75495 Enrollment: Limited to 12.

M. Charles Liberman (Medical School) and Stephane Maison (Medical School)

SHBT 206 (formerly Pathology 205). Molecular Biology of the Auditory System

Catalog Number: 0211

Albert Edge (Medical School)

***Virology 200. Introduction to Virology**

Catalog Number: 6075 Enrollment: Limited to 20.

Max L. Nibert (Medical School), Michaela Gack (Medical School), Elliott D. Kieff (Medical School), David M. Knipe (Medical School), Karl Münger (Medical School), and Priscilla Yang (Medical School)

Virology 202. Proposal Writing

Catalog Number: 6025

Michaela Gack (Medical School), Galit Alter (Medical School), James DeCaprio (Medical School), Benjamin Gewurz (Medical School), and Frederick C. Wang (Medical School)

OTHER COURSES OF INTEREST:

Systems Biology 200. Dynamic and Stochastic Processes in Cells

Catalog Number: 8701

Johan M. Paulsson (Medical School) and Jeremy M. Gunawardena (Medical School)

Systems Biology 204. Biomolecular Engineering and Synthetic Biology

Catalog Number: 71179

Peng Yin (Medical School), William Shih (Medical School), Pamela A. Silver (Medical School), and George M. Church (Medical School)

Biological and Biomedical Sciences (BBS)

BBS 230 (formerly Microbiology 230). Analysis of the Biological Literature

Catalog Number: 36968

Michael Demian Blower (Medical School) and Adrian Salic (Medical School)

Half course (fall term). Tu., Th., 3-6.

Students participate in intensive small group discussions focused on the critical analysis of basic research papers from a wide range of fields including biochemistry, cell and developmental biology, genetics, and microbiology. Papers are discussed in terms of their background, significance, hypothesis, experimental methods, data quality, and interpretation of results. Students will be asked to propose future research directions, to generate new hypotheses and to design experiments aimed at testing them. For the midterm and final exams the students will have to submit written critiques of recent papers from the literature, with an emphasis on proposing new experimental directions to test the models proposed in the papers.

Note: This course is required for first year BBS students, and is open only to BBS students.

Fall 2014

First Meeting: Thursday, September 4, 3:00 P.M., TMEC 250

Final Meeting: Thursday, December 4

Location: First Meeting will be held in TMEC 250; subsequent breakout rooms will be assigned accordingly.

Course Heads: Michael Blower, mblower@molbio.mgh.harvard.edu, and Adrian Salic, adrian_salic@hms.harvard.edu

***BBS 301. Teaching Practicum**

Catalog Number: 77888

David L. Van Vactor (Medical School) 2089, Johanna Gutlerner (Medical School) 7590, and members of the Departments

Half course (fall term). Hours to be arranged based on student availability.

Course for TAs currently teaching in an approved BBS Core Course. The embedded teaching practicum provides practice-based training in facilitating a group discussion; professionalism in the classroom; curriculum design, course evaluation and assessment development; and preparation for teaching throughout and beyond time in graduate school. Teaching assistants are provided training and experience in the development of an early-career teaching philosophy.

Note: TAs should contact Jason Heustis, ronald_heustis@hms.harvard.edu

Fall 2014

First Meeting: Tuesday September 9 (tentative)

Final Meeting: Tuesday December 9 (tentative)

Location: To be finalized based on student availability. Please contact Jason Heustis for details.

Course Heads: David L Van Vactor, davie_vanvactor@hms.harvard.edu

Lecturer/Instructor: Jason Heustis, ronald_heustis@hms.harvard.edu

** Indicates that this course requires faculty signature on study card.*

BBS 330 (formerly Genetics 330). Critical Thinking and Research Proposal Writing

Catalog Number: 36741

Monica P. Colaiacovo (Medical School) 4949 and members of the Medical School Faculty.

Half course (fall term). Hours to be arranged.

A small group tutorial systematically guiding students in the writing of original, hypothesis-driven research proposals from initial topic selection through completion of a final draft.

Note: This course is required for second year BBS students; others need permission of the instructor. Dates, times and locations for all sessions, following the first meeting, will be coordinated between each group of students and the pair of faculty members guiding these sessions. Group assignments will be posted on the course website following the first meeting.

Fall 2014

First meeting: Tuesday, September 2, 2:30-4:00 P.M.

Final meeting: Week of December 19

Location: HMS Building C, Cannon Room

Course Head: Monica P. Colaiacovo, mcolaiacovo@genetics.med.harvard.edu

Curriculum Fellow: Joya Mukerji, joya_mukerji@hms.harvard.edu

Biological Chemistry and Molecular Pharmacology

BCMP 200. Molecular Biology

Catalog Number: 5591

Joseph John Loparo (Medical School), Paul J. Anderson (Medical School), Lee Stirling Churchman (Medical School), Shobha Vasudevan (Medical School), Johannes Walter (Medical School), and Timur Yusufzai (Medical School) and other members of the Departments

Half course (fall term). M., W., F., 10:45-12:15.

An advanced treatment of molecular biology's Central Dogma. Considers the molecular basis of information transfer from DNA to RNA to protein, using examples from eukaryotic and prokaryotic systems. Lectures, discussion groups, and research seminars.

Note: Offered jointly with the Medical School as BP 723.0.

Prerequisite: Intended primarily for graduate students familiar with basic molecular biology or with strong biology/chemistry background.

Fall 2014

First Meeting: Wednesday September 3, 10:45 A.M.

Final Meeting: Friday December 5

Location: Cannon Room, HMS Building C

Course Head: Joseph Loparo, joseph_loparo@hms.harvard.edu

Curriculum Fellow: Jason Heustis, ronald_heustis@hms.harvard.edu, (office) 617-432-5773

***BCMP 218. Molecular Medicine**

Catalog Number: 2049 Enrollment: Limited to 35.

George Q. Daley (Medical School), David E. Cohen (Medical School), and Irving M. London (Medical School)

Half course (fall term). Tu., 1–3.

A seminar on various human diseases and their underlying genetic or biochemical bases. Primary scientific papers discussed. Lectures by faculty and seminars conducted by students, faculty supervision.

Note: Faculty mentors will guide student-led discussions of the papers. Jointly offered with the Medical School as HT 140.

Prerequisite: Molecular Biology and Biochemistry.

Fall 2014

First Meeting: Tuesday, September 9, 1:00 P.M., TMEC 227

Final Meeting: Tuesday, December 9

Location: HMS (TMEC 227) or MIT (E25-117) – please see syllabus for location details.

Course Head: George Daley, george.daley@childrens.harvard.edu

Teaching Assistant: Alissa D’Gama, alissa_d’gama@hms.harvard.edu

** Indicates that this course requires faculty signature on study card.*

BCMP 228. Macromolecular NMR

Catalog Number: 3969

Gerhard Wagner (Medical School), James J. Chou (Medical School), Haribabu Arthanari (Medical School), Kirill Oxenoid (Medical School) and members of the NMR lab

Half course (fall term). M., F., 2–3:30.

Theory and practice of modern methods of macromolecular structure determination using multi-dimensional NMR.

Note: Given in alternate years. Offered jointly with the Medical School as BP 722.0. Classroom lectures on Mondays and Fridays. The course will include classroom lectures, practical training and hands-on problem solving. The latter includes basic aspects of spectrometer operation, computer-based assignment of protein NMR spectra and structure calculation.

Fall 2014

First Meeting: Monday, September 8, 2:00 P.M.

Final Meeting: Friday, December 12

Location: TMEC 227

Course Head: Gerhard Wagner, gerhard_wagner@hms.harvard.edu

BCMP 230. Principles and Practice of Drug Development

Catalog Number: 1295

Lee L. Rubin and Stan Neil Finkelstein (Medical School)

Half course (fall term). Th., 3–6.

Critical assessment of the major issues and stages of developing a pharmaceutical or biopharmaceutical. Drug discovery, preclinical development, clinical investigation, manufacturing and regulatory issues considered for small and large molecules. Economic considerations of the drug development process.

Note: Classes held at MIT. SCRB 230 is also offered as BCMP 230. Students may not take both for credit.

Fall 2014

First Meeting: Thursday, September 4, 3:00 P.M.

Final Meeting: Thursday, December 4

Location: Classes held at MIT - Building 4, Room 163

Course Head: Stan Finkelstein, finkelst@hcp.med.harvard.edu

Teaching Assistant: Abby Horn, abbyhorn@mit.edu

Cell Biology

Cell Biology 226. Concepts in Development, Self-Renewal, and Repair

Catalog Number: 8747 Enrollment: Limited to 12.

Iain A. Drummond (Medical School) and Amar Sahay (Medical School)

Half course (fall term). F., 2–5.

Explores developmental mechanisms through the life cycle, contrasting pluripotency and cell fate restriction in embryos and adult tissues. In depth analysis of in vivo approaches, with emphasis on adult stem cells, tissue repair and self-renewal.

Note: Offered jointly with the Medical School as CB 721.0. For more information visit:

http://www2.massgeneral.org/bbs/CB226/cb_226.htm

Prerequisite: Upper division cell biology or equivalent.

Fall 2014

First Meeting: Thursday, September 4, 2014, 2:00 P.M.**

** **Please note:** All sessions for the remainder of the term will be held on Fridays, 2-5 PM in MGH Simches 3.120

Final Meeting: Friday, December 5

Location: First Meeting – TMEC L-007; Remainder of term: MGH Simches 3.120

Course Heads: Iain A. Drummond, idrummond@partners.org OR idrummond@mgh.harvard.edu

Genetics

Genetics 201. Principles of Genetics

Catalog Number: 4225

Fred Winston (Medical School), Thomas G. Bernhardt (Medical School), Maxwell G. Heiman (Medical School), Mitzi I. Kuroda (Medical School), and Steven A. McCarroll (Medical School)

Half course (fall term). M., W., F., 9-10:20.

An in-depth survey of genetics, beginning with basic principles and extending to modern approaches and special topics. We will draw on examples from various systems, including yeast, *Drosophila*, *C. elegans*, mouse, human and bacteria.

Note: Intended for first-year graduate students. Offered jointly with the Medical School as GN 701.0.

Fall 2014

First Meeting: Wednesday, September 3, 9:00 A.M.

Final Meeting: Monday, December 8

Location: HMS Building C, Cannon Room

Course Head: Fred Winston, Winston@genetics.med.harvard.edu

Curriculum Fellow: Emily Gleason, Emily_gleason@hms.harvard.edu, 617-432-7203

Genetics 220. Molecular Biology and Genetics in Modern Medicine

Catalog Number: 4660

Kiran Musunuru (Medical School)

Half course (fall term). F., 8:30-12:30, Tu., 2-5.

This course will provide a firm foundation for understanding the relationship between molecular biology, developmental biology, genetics, genomics, bioinformatics, and medicine. The goal is to develop explicit connections between basic research, medical understanding, and the perspective of patients. During the course the principles of human genetics will be reviewed. Students will become familiar with the translation of clinical understanding into analysis at the level of the gene, chromosome and molecule, the concepts and techniques of molecular biology and genomics, and the strategies and methods of genetic analysis, including an introduction to bioinformatics. The course will extend beyond basic principles to current research activity in human genetics.

Note: Offered jointly with the Medical School as HT 160.

Fall 2014

First Meeting: Friday, September 5, 8:30 A.M., TMEC 209

Final Meeting: Friday, November 14

Location: First meeting will be held in TMEC 209; later sessions will vary.

Course Head: Kiran Musunuru, kiranmusunuru@gmail.com

Teaching Assistants: Jenny Chen, jjenny@mit.edu; Quinn Sievers, quinlan.l.sievers@gmail.com

Course e-mail: hstgenetics@gmail.com

Human Biology and Translational Medicine

HBTM 235 (formerly BCMP 235). Principles of Human Disease: Physiology and Pathology

Catalog Number: 82892

Constance L. Cepko (Medical School), and members of the Medical School Faculty

Half course (fall term). M., W., F., 9–10:30.

This course covers the normal physiology and pathophysiology of selected organs, through lectures, readings, tutorials based on clinical cases, and patient presentations. Human biology is emphasized, with some examples also drawn from model organisms.

Prerequisite: Knowledge of introductory biochemistry, molecular biology, and cell biology required (MCB52 and MCB54 or equivalent and one year of organic chemistry for undergraduates).

Fall 2014

First Meeting: Wednesday, September 3, 9:00 A.M., NRB 350

Final Meeting: Wednesday, December 3

Location: NRB 350; Wednesdays will be held in TMEC breakout rooms with the exception of the first meeting.

Course Head: Connie Cepko, cepko@genetics.med.harvard.edu

Teaching Assistant: Adam Frange, adamfrange@gmail.com

Immunology

***Immunology 201. Principles of Immunology**

Catalog Number: 8337 Enrollment: Limited to 50.

Ulrich H. Von Andrian (Medical School), Thorsten Mempel (Medical School) and members of the Program in Immunology

Half course (fall term). Tu., Th., 1:30-3, with section Tu., Th., 3-4. EXAM GROUP: 15, 16

Comprehensive core course in immunology. Topics include a broad but intensive examination of the cells and molecules of the immune system. Special attention given to the experimental approaches that led to general principles of immunology.

Note: Intended for students who have had prior exposure to immunology on the undergraduate level. In the absence of such exposure, students *must* obtain the permission of the Course Director. Offered jointly with the Medical School as IM 702.0.

Prerequisite: A background in genetics and biochemistry strongly recommended.

Fall 2014

First Meeting: Tuesday, September 2, 1:30 P.M.

Final Meeting: Thursday, December 4

Location: Jeffrey Modell Immunology Center, Room 100A

Course Heads: Thorsten Mempel, tmempel@mgh.harvard.edu; Ulrich H. Von Andrian, uva@hms.harvard.edu

** Indicates that this course requires faculty signature on study card.*

***Immunology 301. Immunology Seminar**

Catalog Number: 4971 Enrollment: Limited to 20.

Michael C. Carroll (Medical School) 2050 and William Nicholas Haining (Medical School) 6946

Half course (fall term; repeated spring term). W. 12:15-1:15 (lunch) and 3:30-5 (discussion).

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.

Note: Required for, and limited to, first-year Immunology graduate students.

Fall 2014

First Meeting: Wednesday, September 10, 12:15 P.M.

Final Meeting: Wednesday, December 10

Location: Jeffrey Modell Immunology Center, Room 100A

Course Head: Michael Carroll, michael.carroll@childrens.harvard.edu

** Indicates that this course requires faculty signature on study card.*

Medical Sciences

***Medical Sciences 250ab. Human Functional Anatomy**

Catalog Number: 6946 Enrollment: Limited to 52. This course requires rental of a locker.

Lee Gehrke (Medical School)

Full course (fall term). Lectures, M., W., F., 1:30-2:30; laboratory, M., W., F., 2:30-6.

Lectures, detailed laboratory dissections, and prosections provide a thorough exploration of the gross structure and function of the human body. Fundamental principles of embryology and bioengineering promote analytical approaches to understanding the body's design.

Note: Open to qualified graduate students with permission of the course director. The course has a minimum enrollment of 30. This course requires rental of a locker for two hundred and ten dollars. Offered jointly with the Medical School as HT010.

Fall 2014

First Meeting: Wednesday, September 3 2014 at 1:30 P.M.

Final Meeting: Friday, December 12, 2014

Location: HMS Armenise Building, Armenise Amphitheater

Course Head: Lee Gehrke, lee_gehrke@hms.harvard.edu, (617) 253-7608

** Indicates that this course requires faculty signature on study card.*

Microbiology and Immunobiology

***Microbiology 205. Mechanisms of Microbial Pathogenesis**

Catalog Number: 2480 Enrollment: Limited to 40.

Clyde S. Crumpacker II (Medical School) and members of the Department

Half course (fall term). Tu., Th., 8:30-12:30.

The mechanisms of bacterial, mycoplasmal, fungal, and viral pathogenesis are covered. Topics are selected for intrinsic interest and cover the spectrum of pathophysiologic mechanisms of the infectious process. Emphasis on pathogenesis at the molecular level.

Note: Offered jointly with the Medical School as HT 040.

Prerequisite: A background course in molecular biology is strongly encouraged.

Fall 2014

First Meeting: Tuesday, September 2, 8:30 A.M.

Final Meeting: Wednesday, December 17 (Final exam)

Location: TMEC 250

Course Head: Clyde S. Crumpacker, ccrumpac@bidmc.harvard.edu

** Indicates that this course requires faculty signature on study card.*

Microbiology 214. Mechanisms of Bacterial Pathogenesis and Host Immune Response – (New Course)

Catalog Number: 37145

Marcia Goldberg (Medical School) 3783, Michael Starnbach (Medical School) 1816, and Jon Kagan (Medical School) 6235

Half course (fall term). Tu., Th., 10–12.

This course focuses on molecular mechanisms of bacterial pathogenesis and the host response to infection. The class consists of lectures and group discussions emphasizing methods, results, and interpretations of classic and contemporary literature. The course is designed to complement Microbiology 201.

Note: Designed for graduate students in first year or beyond.

Fall 2014

First Meeting: Tuesday, September 2, 10:00 A.M.

Final Meeting: Tuesday, December 9

Location: TMEC 333

Course Head: Marcia Goldberg, marcia.goldberg@mgh.harvard.edu

Neurobiology

Neurobiology 200. Neuroscience

Catalog Number: 6062 Enrollment: Limited to 50.

John A. Assad (Medical School), Matthew P. Frosch (Medical School), Jeffrey R. Holt (Medical School), Rosalind A. Segal (Medical School), and Ziv Williams (Medical School)

Half course (fall term). M., W., 8:30-12; F., 8:30-10:30.

This is a comprehensive course in Neuroscience. Basic principles of organization and function of the nervous system will be discussed with frequent reference to pathophysiology of neurological and psychiatric disorders. Combining pathophysiology with basic neuroscience should provide physician/scientists and Ph.D. candidates with a dynamic picture of the rapidly evolving field of neuroscience and the experimental process from which the picture is derived, and all students should emerge with a greater awareness both of the applications of their work in alleviating disease, and of the ways that disease can provide insight into basic scientific questions. The course will span modern neuroscience from molecular neurobiology to perception and cognition, and will include the following major topics: Anatomy and Development of the Brain; Cell Biology of Neurons and Glia; Ion Channels and Electrical Signaling; Synaptic Transmission, Integration, and Chemical Systems of the Brain; Sensory Systems, from Transduction to Perception; Motor Systems; and Higher Brain Function (Memory, Language, Affective Disorders).

Note: Offered jointly with Harvard Medical School as HST 130. Follows the HMS calendar.

Prerequisite: Introductory cell and molecular biology course with permission of instructor.

Fall 2014

First Meeting: Wednesday, September 3, 8:30 A.M.

Final Meeting: Friday, December 12

Location: TMEC 227

Course Heads: John Assad, jassad@hms.harvard.edu, (617) 432-2804 and Matthew Frosch, mfrosch@partners.org, (617) 726-5156

Course Administrator: Deborah Baker (deborah_baker@hms.harvard.edu), (617) 432-2507

***Neurobiology 220. Cellular Neurophysiology**

Catalog Number: 2141

Bruce P. Bean (Medical School), Wade G. Regehr (Medical School), Bernardo L. Sabatini (Medical School), and Gary I. Yellen (Medical School)

Half course (fall term). Tu., Th., 9–12.

Introduction to the physiology of neurons, focusing on using electrophysiology and imaging to study function of ion channels, generation of action potentials, and physiology of synaptic transmission. Includes problem sets and reading of original papers.

Note: Offered jointly with the Medical School as NB 714.0.

Prerequisite: Introductory neurobiology.

Fall 2014

First Meeting: Tuesday, September 2, 9:00 A.M.

Final Meeting: Thursday, December 18

Location: Goldenson 122

Course Head: Bruce P. Bean, bruce_bean@hms.harvard.edu

** Indicates that this course requires faculty signature on study card.*

Neurobiology 230. Visual Object Recognition

Catalog Number: 78454

Gabriel Kreiman (Medical School)

Half course (fall term). M., 3:30–5:30.

Examines how neuronal circuits represent information and how those circuits are implemented in artificial intelligence algorithms. Topics: architecture of visual cortex, neurophysiology, visual consciousness, computational neuroscience, models of pattern recognition and computer vision.

Prerequisite: Life Sciences 1a (or Life and Physical Sciences A) and Life Sciences 1b (or equivalent).

Recommended: Math (Maa/Mab, Math 1A,1B, Math 19 a or equivalent). Physical Sciences 1. MCB 80.

Fall 2014

Meeting Dates: September 8, 15, 22, 29; October 6, 20, 27; November 3, 10, 17, 24; December 1

First Meeting: Monday, September 8, 3:30 P.M.

Final Meeting: Monday, December 1

Location: BioLabs 1075 (16 Divinity Avenue Cambridge, MA 02138)

Course Head: Gabriel Kreiman, gabriel.kreiman@childrens.harvard.edu, (617) 919-2530

Speech and Hearing Bioscience and Technology

SHBT 200. Acoustics of Speech and Hearing

Catalog Number: 60388 Enrollment: Limited to 20. Must have a minimum of 5 students
John J. Rosowski (Medical School) and Christopher A. Shera (Medical School)

Half course (fall term). Lectures, Tu., Th., 1–2:30; recitations, W., 12-1.

Discusses limitations that the speech production and hearing systems impose on the sounds we produce and sense. Focuses on acoustic cues used in sound localization, speech production mechanisms, the mechanics of sound reception and perception.

Note: This course is taught in consort with 6.551J/HST.714J at the Massachusetts Institute of Technology. Classes will be held at MIT.

Prerequisite: Mathematical methods in science (Applied Mathematics 21a or Mathematics 21a) or equivalent. Rigid body mechanics (Physics 11A), or electrical circuits (Engineering Science 154) or permission of the instructor

Fall 2014

First Meeting: Wednesday, September 3, 12:00 P.M.

Final Meeting: Tuesday, December 9

Location: MIT Room 34-301

Course Head: John Rosowski, john_rosowski@meei.harvard.edu

Course Website: <http://web.mit.edu/6.551j/www/>

SHBT 201. Biology of the Inner Ear

Catalog Number: 75495 Enrollment: Limited to 12.

M. Charles Liberman (Medical School) and Stephane Maison (Medical School)

Half course (fall term). Tu., Th., 9–10:30, F. laboratory hours to be arranged. EXAM GROUP: 11, 12

Normal biology, biophysics, physiology and morphology of the inner ear, its sensory innervation and efferent control systems, and the mechanisms underlying sensorineural hearing loss and balance disorders. Material is presented through lectures, laboratory exercises and discussions of the primary literature.

Prerequisite: Introductory neurobiology recommended

Fall 2014

First Meeting: Tuesday, September 2, 9:00 A.M.

Final Meeting: Tuesday, December 2

Location: Massachusetts Eye and Ear Infirmary (243 Charles Street, Boston, MA 02114), Room 432

Course Head: Charles Liberman, charles_liberman@meei.harvard.edu

SHBT 206 (formerly Pathology 205). Molecular Biology of the Auditory System

Catalog Number: 0211

Albert Edge (Medical School)

Half course (fall term). Tu., 4–6.

Advances in molecular biology of hearing. Topics: Transcriptional and post-translational regulation of gene expression; cell fate determination during inner ear development; inner ear stem cells and regenerative capacity in various species; use of genomics in investigations of the inner ear; critical genes for generating functional hair cells.

Note: Given in alternate years.

Prerequisite: Introductory courses in neurobiology and molecular biology are recommended.

Fall 2014

First Meeting: Tuesday, September 9, 4:00 P.M.

Final Meeting: Tuesday, December 2

Location: Massachusetts Eye and Ear Infirmary (243 Charles Street, Boston, MA 02114), 4th floor

Course Head: Albert Edge, albert_edge@meei.harvard.edu

Virology

***Virology 200. Introduction to Virology**

Catalog Number: 6075 Enrollment: Limited to 20.

Max L. Nibert (Medical School), Michaela Gack (Medical School), Elliott D. Kieff (Medical School), David M. Knipe (Medical School), Karl Münger (Medical School), and Priscilla Yang (Medical School)

Half course (fall term). M., W., 1:30-3:30.

Introduction to virology. The lecture component reviews the basic principles of virology and introduces the major groups of human viruses. Weekly discussion groups critically analyze selected papers from the literature.

Note: There will be a final project consisting of a proposal based on laboratory rotations (for Virology, BBS, or Immunology Program students) or a final paper based on a topic from the literature. Offered jointly with the Medical School as MG 705.0.

Fall 2014

First Meeting: Wednesday, September 3, 1:30 P.M.

Final Meeting: Wednesday, December 10

Location: TMEC 447

Course Head: Max Nibert, max_nibert@hms.harvard.edu

** Indicates that this course requires faculty signature on study card.*

Virology 202. Proposal Writing

Catalog Number: 6025

Michaela Gack (Medical School), Galit Alter (Medical School), James DeCaprio (Medical School), Benjamin Gewurz (Medical School), and Frederick C. Wang (Medical School)

Half course (fall term). W., 1:45–5:00.

Students will write, present, and evaluate research proposals in the areas of virus replication, viral pathogenesis and treatment and prevention of viral infections.

Note: Offered jointly with the Medical School as MG 724.0.

Prerequisite: General background in biochemistry and virology.

Fall 2014

First Meeting: Wednesday, September 3, 1:45 P.M.

Final Meeting: Wednesday, November 5

Location: TMEC 340

Course Head: Michaela Gack, Michaela_gack@hms.harvard.edu

Other courses of interest

Systems Biology 200. Dynamic and Stochastic Processes in Cells

Catalog Number: 8701

Johan M. Paulsson (Medical School) and Jeremy M. Gunawardena (Medical School)

Half course (fall term). Tu., Th., 10-11:30, and a weekly section to be arranged. EXAM GROUP: 12, 13

Rigorous introduction to (i) dynamical systems theory as a tool to understand molecular and cellular biology (ii) stochastic processes in single cells, using tools from statistical physics and information theory.

Note: Students planning to take both quarter courses (SB303 and 304) must enroll in this as a half course on their study card as SysBio200 for now and in the future. Students who take one half of this quarter can NOT ever take the other half for credit.

Prerequisite: College-level calculus.

Fall 2014

First Meeting: Tuesday, September 2, 10:00 A.M.

Final Meeting: Tuesday, December 2

Location: Cambridge, NW 353

Course Head: Jeremy Gunawardena, jeremy@hms.harvard.edu; Johan Paulsson, johan_paulsson@hms.harvard.edu

Systems Biology 204. Biomolecular Engineering and Synthetic Biology

Catalog Number: 71179

Peng Yin (Medical School), William Shih (Medical School), Pamela A. Silver (Medical School), and George M. Church (Medical School)

Half course (fall term). M., W., 2–3:30. EXAM GROUP: 7, 8

A course focusing on the rational design, construction, and applications of nucleic acid- and protein-based synthetic molecular and cellular machinery and systems. Students are mentored to produce substantial term projects.

Note: See <http://sb204.net> for details.

Fall 2014

First Meeting: Wednesday, September 3, 2:00 P.M.

Last Meeting: Monday, December 1

Location: 3 Blackfan Circle, Room 521

Course Head: Peng Yin, peng_yin@hms.harvard.edu