

# Spring 2022 Quarter Courses

*\*Referred to as "Half Term" in GSAS Academic Calendar\**

*Spring Session 1 (Half-Term QC's):*  
*Spring Session 2 (Half-Term QC's):*

## ENROLLMENT DEADLINES

Check-in Opens	Jan. 5
Course Registration Opens	Jan. 12
Check-in DDline	Jan. 12
Spring 1 Course Reg. Deadline	Jan. 20
Spring 1 Begins	Jan. 24
Spring 1 Add/Drop Deadline (no fee)	Feb. 3
Spring 1 Classes End	Mar. 11
Spring 2 Begins	Mar. 21
Spring 2 Course Reg. Deadline	Mar. 25
Spring 2 Add/Drop Deadline	Mar. 31

## GSAS ACADEMIC CALENDAR



<https://registrar.fas.harvard.edu/gsas-academic-calendar>

## REMINDERS

You **cannot register** for courses until you **CHECK-IN** (or go to: <https://registrar.fas.harvard.edu/online-check-in>)

Register for **16 credits** for full-time student status and health insurance eligibility

Register by going to <https://my.harvard.edu/>

For questions, contact: [dms\\_courses@hms.harvard.edu](mailto:dms_courses@hms.harvard.edu)



**CELLBIO 302QC Advanced Experimental Design for Biologists**

David Glass, Randall King

**CELLBIO 307QC Molecular Aspects of Chromatin Dynamics**

Raul Mostoslavsky, Lee Zou, Karen Adelman, Cigall Kadoch, Christopher Ott, Danesh Moazed

**CELLBIO 314QC The Science of Mindfulness**

Neena Haider

**GENETIC 302QC Teaching 101: Bringing Effective Teaching Practices to your Classroom**

Vanessa Aller, David Ginnings, Bradley Coleman

**HBTM 305QC Molecular Bases of Eye Disease**

Darlene Dartt, Magali Saint-Geniez

**IMMUN 305QC Neuro-Immunology Development, Regeneration & Disease**

Isaac Chiu, Jun Huh

**MED-SCI 312QC Graduate TA Training in the Biomedical Sciences**

Brad Coleman

**MED-SCI 316QC PhD Pathfinder**

Edward Chouchani, Jane Riccardi

**MICROBI 360QC The Human Microbiome: Comprehensive Experimental Design & Methodologies**

Aleksandar Kostic, Abigail Sloan Devlin

**NEUROBIO 307QC Molecular Causes of Congenital Defects of the CNS**

Mary Loeken

**NEUROBIO 316QC Probabilistic Models for Neural Data: From Single Neurons to Population Dynamics**

Jan Drugowitsch



## Cell Biology

### **CELLBIO 302QC Advanced Experimental Design for Biologists**

David Glass, Randall King, Catherine Dubreuil

2 units. Enrollment limited to 24. Instructor consent required.  
Spring 1 QC

Wed., 6:00pm – 8:00pm

**Meeting dates:** Jan 26 – Mar 9

**Meeting Location:** Tosteson Medical Education Ctr. (TMEC) – TMEC 306 Learning Studio

This course will focus on both the theory and practice of experimental design. The emphasis is on project planning and vetting, individual experimental design, and trouble-shooting. Special focus will be placed on methods to avoid experimental bias, and potential sources of inappropriate interpretation. Also the importance of system validation is especially emphasized.

**Course Note:** Special consent required - preference given to Therapeutics Certificate Program students.

**Course Head:** David Glass, [david\\_glass@hms.harvard.edu](mailto:david_glass@hms.harvard.edu)

**Other Instructors:** Randy King, [randy\\_king@hms.harvard.edu](mailto:randy_king@hms.harvard.edu), Catherine Dubreuil, [catherine\\_dubreuil@hms.harvard.edu](mailto:catherine_dubreuil@hms.harvard.edu)

### **CELLBIO 307QC Molecular Aspects of Chromatin Dynamics**

Raul Mostoslavsky, Lee Zou, Karen Adelman, Cigall Kadoch, Christopher Ott, Danesh Moazed

2 units.  
Spring 2 QC

T/TH, 3:00pm – 5:00pm

**Meeting dates:** April 5 - May 26

Dates breakdown: 4/5, 4/12, 4/19, 4/21, 4/26, 4/28, 5/3, 5/10, 5/12, 5/17, 5/24, 5/26

**Meeting Location:** Tosteson Medical Education Ctr. (TMEC) – TMEC 423 Conference Rm

This course will discuss the role of chromatin dynamics in modulating molecular and cellular processes. The genetic information encoded in our DNA is organized in a defined set of chromosomes, which are condensed about 10,000 fold in order to fit in the cell nucleus. This compaction occurs through packaging of the DNA around histone proteins, a structure known as chromatin. In what was thought to be a rigid structure, today we know that chromatin is an



amazingly dynamic folding that plays a crucial role in controlling accessibility of factors to the DNA, and as such, it regulates a vast number of critical biological functions, including gene transcription, DNA replication, DNA repair and cellular identity. In this course we will attempt to cover some of the basic molecular mechanisms that play a role in regulating chromatin dynamics, and in turn how chromatin itself modulate biological processes, including basic mechanisms of inheritance. We will specifically discuss the role of DNA methylation, histone modifications, nucleosome dynamics and novel epigenetic modulators in the context of different biological processes for which chromatin accessibility appears to play a crucial role.

**Course Notes:** The course consists of 12 sessions, 2hr each session; 8 regular sessions, 4 discussion sessions.

**Course Head:** Raul Mostoslavsky, [rmostoslavsky@mgh.harvard.edu](mailto:rmostoslavsky@mgh.harvard.edu)

**Other Instructors:** Danesh Moazed, [danesh\\_moazed@hms.harvard.edu](mailto:danesh_moazed@hms.harvard.edu), Lee Zou, [lzou1@partners.org](mailto:lzou1@partners.org), Cigall Kadoch, [cigall\\_kadoch@dfci.harvard.edu](mailto:cigall_kadoch@dfci.harvard.edu), Karen Adelman, [karen\\_adelman@hms.harvard.edu](mailto:karen_adelman@hms.harvard.edu), Christopher Ott, [christopher.ott@mgh.harvard.edu](mailto:christopher.ott@mgh.harvard.edu)

**Discussion Leaders:** Bob Kingston, Jeannie Lee, Brad Bernstein and Jay Bradner

## **CELLBIO 314QC The Science of Mindfulness: A research based approach to understanding and practicing mindfulness**

Neena Haider

2 units. Enrollment limited to 15. Instructor consent required.  
Spring 1 QC

W/F, 9:00am – 10:00am

**Meeting Dates:** February 2 – March 10

**Meeting Location:** Countway, 503 Ballard Room and Tosteson Medical Education Ctr. (TMEC), TMEC 104 Peabody classroom

This course delves into the science behind mindfulness using a research- based approach to understand and impact of mindfulness on the mind and body. The course will include a discussion of published work as well as practical applications in a workshop format. Topics include power of breath, positive thinking, and impact of mindfulness on cognitive function. Workshop portions will include guided breath and guided meditation and learning how to focus the mind, and learn observation without judgment.

**Course Heads:** Neena Haider, [Neena\\_Haider@MEEI.HARVARD.EDU](mailto:Neena_Haider@MEEI.HARVARD.EDU)



## Genetics

### **GENETIC 302QC Teaching 101: Bringing Effective Teaching Practices to your Classroom**

Vanessa Aller, David Ginnings, Bradley Coleman

2 units. Enrollment limited to 16. Instructor consent required.

Spring 1 QC

TH., 2:00pm – 4:00pm

**Meeting Dates:** Jan 24 – April 10

**Meeting Location:** Tosteson Medical Education Ctr. (TMEC) – TMEC 104 Peabody Classroom

A course for development of practical skills for effective teaching. Primary focus is hands-on experience, but with the opportunity to explore online teaching options with objective-oriented lesson planning and execution, with emphasis on active learning techniques and how they can be applied in both large and small enrollment classes.

#### **Course learning objectives:**

By the end of this course, participants will be able to:

- Who are your learners: Describe your learners and define their needs.
- Identify instructional goals: Describe strategies for cultivating course climates that are student-centered and inclusive
- Map the educational experience: Create assessments, in-class activities, and instructional methods that align with course objectives
- Deliver educational experiences: Facilitate discussions and other learning activities in small- and large-group contexts
- Assess and revise: Collect and apply constructive feedback from students and colleagues to improve teaching effectiveness
- Incorporate technology and active learning models into your teaching

**Class Note:** In addition to the live sessions, each week will require 1-2 hours of asynchronous classwork which may include written or recorded work to be submitted on Canvas prior to the live session.

**Recommend Prep:** This course is complementary to CELLBIO 306qc: Teaching 100, but neither course is a prerequisite for the other. Postdocs and other Harvard affiliates who are not current students may be allowed to audit as space allows. Please contact the instructors to request permission to audit.

**Course Heads:** Vanessa Aller, [vanessa@hms.harvard.edu](mailto:vanessa@hms.harvard.edu), David Ginnings, [ginnings@hsph.harvard.edu](mailto:ginnings@hsph.harvard.edu), Bradley Coleman, [Bradley\\_Coleman@hms.harvard.edu](mailto:Bradley_Coleman@hms.harvard.edu)



## Human Biology & Translational Medicine

### **HBTM 305QC Molecular Bases of Eye Disease**

Darlene Dartt, Magali Saint-Geniez

2 units.

Spring 1 QC

Mon., 3:00pm – 5:00pm (**schedule includes one Wednesday date**)

**Meeting Dates:** January 24th, January 31st, February 7th, **February 16<sup>th</sup> (WEDNESDAY)**, March 7, March 14th, March 21st, March 28th, April 4th, April 11th, April 25th, May 9th

**Meeting Location:** Starr Center Auditorium at Schepens Eye Research

This course provides an overview of the pathogenic processes of prevalent ocular diseases. The goals of the course are: (i) to explore the structural and functional aspects of the eye relevant to understanding its pathology, (ii) to review the manifestations of common eye diseases and their effects on vision, (iii) to discuss current views and research in the pathophysiology, and strategies for therapeutic intervention. For most sessions, the basic science and clinical topics will be presented by two faculty lecturers.

**Course Heads:** Darlene Dartt, [Darlene\\_Dartt@meei.harvard.edu](mailto:Darlene_Dartt@meei.harvard.edu), Magali Saint-Geniez, [Magali\\_Saintgeniez@MEEI.HARVARD.EDU](mailto:Magali_Saintgeniez@MEEI.HARVARD.EDU)

**Course Coordinator:** Kahira Saez-Torres, [kahira\\_saez-torres@meei.harvard.edu](mailto:kahira_saez-torres@meei.harvard.edu)

## Immunology

### **IMMUN 305QC Neuro-Immunology Development, Regeneration & Disease**

Isaac Chiu, Jun Huh

2 units.

Spring 2 QC

Tue., 4:00pm – 6:00pm

**Meeting Dates:** Mar 8 – April 26

**Meeting Location:** Modell Ctr., 100A classroom



It is increasingly clear that the nervous and immune systems share parallel molecular pathways, and communication between neurons and immune cells plays significant roles in homeostasis and disease. This course will investigate current topics in neuro-immunology: CNS development, chronic pain, neuro-degeneration, immune modulation by neurons, neuron modulation by immune cells, neuro-glia interaction, allergy, auto-immunity, and infection. We will focus our discussions on molecular mechanisms shared by the immune and nervous systems and the molecular cross-talk between these two systems.

**Class Note:** Each class will cover a specific topic in neuro-immunology. Students should be prepared to lead discussions on pre-selected papers for each session.

**Course Heads:** Isaac Chiu, [isaac\\_chiu@hms.harvard.edu](mailto:isaac_chiu@hms.harvard.edu), Jun Huh, [jun\\_huh@hms.harvard.edu](mailto:jun_huh@hms.harvard.edu)

**Teaching Assistant:** Yunjin Lee, [Yunjin\\_Lee@hms.harvard.edu](mailto:Yunjin_Lee@hms.harvard.edu), Ines Zalosnik, [ines\\_zalosnik@hms.harvard.edu](mailto:ines_zalosnik@hms.harvard.edu)

## Medical Sciences

### **MED-SCI 312QC Graduate TA Training in the Biomedical Sciences**

Bradley Coleman

2 units. Enrollment limited to 50. Instructor consent required.  
Spring 1 QC

**Meeting Dates:** TBD

**Meeting Location:** TBD

MED-SCI 312QC is designed to be an 'on the ground' training for Longwood-based teaching fellows. The course instructs graduate student teaching fellows in the pedagogy and course management skills required to be an effective TF. The course begins with three two-hour class sessions that focus on the basics of evidence-based teaching practice and practical strategies for working with students. As the semester progresses, students use their work as TFs as the basis for continued instruction and reflection on teaching best practices and the challenges of their application in real-world settings.

**Course Notes:** Open to any HILS graduate student serving as a Teaching Fellow, pending approval of the Curriculum Fellow working in their course (or by special arrangement approved by the Director of the Curriculum Fellows Program).



All students interested in registering for MED-SCI 312QC should also register for the Graduate TA Training in the Biomedical Sciences nanocourse. Any interested student may attend the first three sessions of MED-SCI 312QC and receive nanocourse credit, regardless of whether they are a current TF.

**Course Director:** Bradley Coleman, [bradley\\_coleman@hms.harvard.edu](mailto:bradley_coleman@hms.harvard.edu)

### **MED-SCI 316QC PhD Pathfinder**

Edward Chouchani, Jane Riccardi

2 units. Instructor consent required.  
Spring 2 QC

M - F, 5:00pm - 7:00pm (with an hour for networking)

**Meeting Dates:** Mar 21 – Mar 25

**Meeting Location:** 403 Countway Library

In this course, *PhD Pathfinder*, students will learn about the many career paths available to people with advanced degrees in biomedical research including academia, biotech, patent law, science writing/publishing, consulting/business, education, and science policy/regulation. Students will also learn how to find opportunities on and off campus to take the next step in their career plans.

A PhD education provides students with fundamental knowledge about the principles and practice of the scientific method and promotes development of problem-solving skills in ways that are quite useful for many different professions. Students will have the opportunity to learn from experienced professionals representing each of these paths, to learn about strategies for career development, curriculum enrichment, and networking opportunities that will make them competitive for their career of choice.

The course is open to all PhD students interested in learning about the range of career options available to biomedical PhDs. The course includes talks, didactic sessions, workshops and networking events to promote interactions between students and invited speakers. There will be a special emphasis on helping students with their own skill self-assessment to assist in career and professional development. After each session there will be a small networking reception for both the students and lecturers.

**Course Note:** Students are required to attend all five sessions for course credit.

**Course Director:** Edward Chouchani

**Course Manager:** Jane Riccardi, [jane\\_riccardi@hms.harvard.edu](mailto:jane_riccardi@hms.harvard.edu)



## Microbiology & Immunobiology

### **MICROBI 360QC The Human Microbiome: Comprehensive Experimental Design and Methodologies**

Aleksandar Kostic, Abigail Sloan Devlin

2 units. Enrollment limited to 15. Instructor consent required.  
Spring 1 QC

M/W, 1:00pm - 2:30pm

**Meeting Dates:** Jan 24 – March 9

**Meeting Location:** Folin Wu Room, C Building

This is a comprehensive introduction to the study of human microbial communities and their functions relevant to human physiology. Topics covered include metagenomics, mechanistic interactions of the microbiome with metabolism, the immune system, and the gut-brain axis. Rather than lectures, this course is primarily a critical discussion of the literature

**Course Heads:** Aleksandar Kostic, [aleksandar.kostic@joslin.harvard.edu](mailto:aleksandar.kostic@joslin.harvard.edu), Sloan Devlin, [sloan\\_devlin@hms.harvard.edu](mailto:sloan_devlin@hms.harvard.edu)

## Neurobiology

### **NEUROBIO 307QC Molecular Causes of Congenital Defects of the CNS**

Mary Loeken

2 units. Enrollment limited to 12. Instructor consent required  
Spring 1 QC

Thurs., 3:00pm – 6:00pm

**Meeting dates:** Jan 27 – March 3

**Meeting location:** Tosteson Medical Education Ctr. (TMEC) – TMEC 333 Conference Rm.

Congenital defects can be caused by inheritance of a defective gene, maternal infection, or prenatal exposure to environmental teratogens. Use of mutant mouse strains and genomic sequencing have been particularly useful in the rapid proliferation of our understanding of the cellular and molecular mechanisms by which congenital defects of the brain or nervous system



arise, and how they lead to functional consequences that range from biochemical abnormalities to gross structural defects.

**Course Notes:** Given every three years.

**Course Head:** Mary Loeken, [mary.loeken@joslin.harvard.edu](mailto:mary.loeken@joslin.harvard.edu)

## **NEUROBIO 316QC Probabilistic Models for Neural Data: From Single Neurons to Population Dynamics**

Jan Drugowitsch

2 units.

Spring 1 QC

Wed., 5:00pm – 7:00pm

**Meeting dates:** Jan 26 – March 23

**Meeting location:** Tosteson Medical Education Ctr. (TMEC) – TMEC 448 Conference Rm.

Probabilistic models are a powerful approach for gaining an understanding of what drives the activity of individual neurons and neural populations. This course will dissect their modular, plug-and-play structure, from single-neuron models over generalized linear models to state space models for population dynamics. Students will learn their basic building blocks, and how to flexibly assemble them to suit their own data analysis needs. Upon completion of the course, students should be able to (i) identify the model structure and associated assumptions of common models in the literature; (ii) apply existing probabilistic models to neural datasets; and (iii) flexibly design new models by re-using existing model components.

**Recommended Prep:** The course has no hard prerequisites, but students are expected to have some understanding of linear algebra, calculus, and (Bayesian) probability theory. Furthermore, they should be comfortable with Python, which will be used for exercises.

**Course Heads:** Jan Drugowitsch, [jan\\_drugowitsch@hms.harvard.edu](mailto:jan_drugowitsch@hms.harvard.edu)

