

The Blue Book

A Course Guide for the
Secondary Field in
Global Health and Health Policy

2021–2022

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What Can You Expect from Global Health and Health Policy?

Interdisciplinary Approach

Explore interdisciplinary world health challenges from many perspectives; use different disciplinary approaches to learn about health care delivery, health systems, public health and health policy. Courses in the GHHP Secondary Field sit within three schools and 27 FAS departments. These courses represent an array of perspectives on global health topics and can inform your course of study both in and out of the classroom.

Local and Global Perspective

Learn how health is influenced by social, economic, political, cultural, and environmental factors, both locally and globally. Your GHHP Secondary Field could include any of the above topics or move into themes such as: global governance for health; the relevance and morality of socioeconomic inequality in health; consequences of politics and the role of health in foreign policy, national security, and economic development.

Explore the Connections

Learn about the rising global burden of chronic diseases in high-, low-, and middle-resource countries; the emergence of pandemic diseases and their economic and psychological impact; health consequences of travel, urbanization and migration, wars and ethnic conflict; changes in climate and other environmental factors, including water and food security.

Experiential Learning

Studying global health and health policy requires integrative experiential learning to connect the knowledge and skills learned in the classroom to real-world complexities. You can take advantage of more than 50 summer internships, both domestic and abroad, and continue your work as part of your research requirement. More information about summer opportunities and funding can be found at <https://ghhp.fas.harvard.edu/ExperientialLearning>.

Faculty Mentorship

Learn from faculty members teaching global health courses from across the university and receive one-on-one mentorship on independent research. Participate in Harvard Global Health Institute workshops and student roundtables. Work with faculty on research in their field or get valuable advice on projects of your own creation.

This Booklet

The courses listed in this booklet fulfill requirements of the Secondary Field in Global Health and Health Policy (GHHP). The booklet includes courses that are listed in the my.harvard.edu as of August 16, 2021. Since the terms and times in which courses are offered can change from time to time, students should consult my.harvard.edu for the most accurate, up-to-date information.

Spreadsheet of Courses

A list of courses that fulfill the various requirements of the Secondary Field in Global Health and Health Policy is available as a sortable spreadsheet on the GHHP website: <https://ghhp.fas.harvard.edu/courses-0>. **Note that the spreadsheet has two tabs at the bottom:** the left tab lists courses that appear in the 2021-22 course catalogs, while the right tab lists courses that were offered in the past and still count for GHHP credit.

Petitioning Courses for GHHP Credit

Students may petition to have courses not listed in the Blue Book count for GHHP Secondary Field credit. A course will not be approved unless it has substantial global health or health policy content. To petition a course, email your request to ghhp@fas.harvard.edu, attach a syllabus, and explain which category within the GHHP Secondary Field you believe the course satisfies. Note that the only HSPH courses listed in the Blue Book are those that have been petitioned previously. It is likely that the majority of courses offered at HSPH, once petitioned and reviewed, would count for GHHP; however, be aware that many courses offered at HSPH are half-semester courses and provide only half the credit of a semester-long course in FAS.

Cross-Registration

Students must cross-register in order to take classes in Harvard schools outside of FAS. Policies and deadlines for cross-registration generally vary from school to school. Note that passing grades received for cross-registered courses will not be used in computing a student's

GPA except when the courses are counted toward concentration requirements. Students wishing to cross-register should consult the discussion of cross-registration in the *FAS Handbook for Students* at this webpage: <https://handbook.fas.harvard.edu/book/cross-registration>.

Prerequisites and Instructor Permission

The courses listed in this booklet are suggestions for undergraduates who are interested in learning more about global health and health policy or the application of other disciplines to global health/health policy issues. *It is the responsibility of students to ensure that they have the correct prerequisites and the permission of the instructor, when required, before they enroll in a course.*

Questions or Comments?

Do you have any comments about this booklet? Do you know of a course that is not listed here and should be? Would you like to receive a copy of this booklet in future years and/or an extra copy of this year's booklet? Please contact us at ghhp@fas.harvard.edu.

Harvard Secondary Field in Global Health and Health Policy Requirements

In total, five courses (20 credits) are required:

One Foundational Course:

- GENED 1063: World Health: Challenges and Opportunities [Formerly "Societies of the World 24: Is Globalization Good or Bad for World Health?"]
- GENED 1079: Why is There No Cure for Health? [Formerly "Empirical and Mathematical Reasoning 20"]
- GENED 1093: Who Lives, Who Dies, Who Cares? Reimagining Global Health [Formerly "Societies of the World 25: Case Studies in Global Health: Biosocial Perspectives"]
- *Not Offered in 2021-2022:* GENED: USW 11 American Health Care Policy

One Research Course:

- One term of the senior thesis tutorial, when the thesis pertains to global health or health policy
- One term of the senior thesis tutorial, when students write an additional thesis chapter on the global health or health policy implications of their hard science, engineering, or computer science thesis
- Global Health and Health Policy 99: Research in Global Health and Health Policy
- Supervised Reading and Research course (GHHP 91 or equivalent course in another department), culminating in a research paper pertaining to global health or health policy

Additional guidelines regarding the research requirement are available at <http://ghhp.fas.harvard.edu>

Three Additional Courses, one course in three of the following eight categories:

Humanities and Social Sciences

- Economics of Health
- Ethics of Health
- Health and Demography
- Health, Culture, and Society
- History and Practice of Medicine
- Politics of Health

Sciences

- Engineering Sciences and Statistics
- Science of Health and Disease

Course options for the eight categories are listed in this Blue Book. Note that the eight categories are divided into two areas, Humanities & Social Sciences, and Sciences.

Students are strongly encouraged to take at least one course from both areas.

Other Information:

- Only one of the five courses may be non-letter-graded. (Exception: Two courses may be taken non-letter-graded if one is the senior thesis tutorial used to satisfy the research requirement.)
- Only one course may double count for a secondary field and concentration.
- A maximum of two non-FAS courses may count for the GHHP Secondary Field. This includes courses taken at other Harvard schools, including Harvard Summer School, and courses taken in study abroad programs.

Course Listings by GHHP Category

FOUNDATIONAL COURSES

GENED 1063: World Health: Challenges and Opportunities

Sue J. Goldie

Spring; MW 10:30-11:45

Class Capacity: 200

Consent Required: Instructor

Extraordinary changes in the world present both risks and opportunities to health—unprecedented interconnections across borders, rapidly shifting global demographics, and changing patterns of diseases and injuries. This course will challenge your assumptions about the world’s populations, as you discover surprising similarities and unexpected differences between and within countries. Approaching the concept of health as a fundamental prerequisite for building strong societies, we will explore its connection to human rights, international relations, and sustainable development. Using case examples of contemporary health challenges, we explore the influence of social, political, and environmental determinants on health, particularly transnational risks associated with globalization. We consider solutions from an array of perspectives, contributions from within and outside the health sector, and interventions at the local, national and global levels. By the end of the course, you will be equipped to thoughtfully analyze important health challenges and appreciate how evidence is contextualized and translated to policy and action.

GENED 1079: Why is There No Cure for Health?

David Cutler

Fall; TTh 12-1:15

Around the world, billions of dollars are spent on health care treatments, public health initiatives, and pharmaceutical research and development. So why are we still not able to prevent preventable diseases, provide affordable healthcare for millions of people, and deliver cures for curable diseases? And what are the best ways to address these issues?

Because these questions are so large, we will focus our discussion around questions like: What steps should be taken to address epidemics? How should the United States

reform its health care system? And how should prescription drugs be produced and sold?

We will explore how social scientists address empirical questions, the types of data that are available, how those data are analyzed, and the confidence with which causal statements are made. By the end of the course, you will be able to dissect a large question—such as how to reform American healthcare—into its technological, social, economic, and moral components, and weigh potential solutions according to these guiding vectors.

GENED 1093: Who Lives, Who Dies, Who Cares? Reimagining Global Health

Arthur Kleinman, Salmaan Keshavjee, Anne Becker, Paul Farmer,

Fall; TTh 10:30-11:45

If you are sick or hurt, whether you live or die depends not only on biological factors, but social ones: who you are and where you are, what sort of healthcare system is available to help you survive, and what kind of care is available to help you recover, if society believes you deserve it. The global coronavirus pandemic illustrates with dramatic urgency the role social forces play in patterning health inequities and determining individual fates. The vulnerabilities of those most likely to get sick and to die from Covid-19 stem from the ongoing effects of systemic racism on racialized subjects, the devaluation of eldercare and precarity of low-paid work under neoliberal forms of governance, and enduring material effects of colonial-era power structures that render health care systems dangerously weak or inaccessible for many communities. Now, as ever, it is imperative to develop frameworks and methodologies to identify and to intervene effectively in harmful social configurations that cause illness and suffering.

Most medical research narrowly focuses on the biological basis of disease, but this course takes a novel biosocial approach to reveal how governments, institutions, and histories shape health and well-being, how poverty and racism get into someone’s lymph nodes, how cost-saving measures manifest as tuberculosis in someone’s lungs. In doing so, the course challenges conventional assumptions within the field of global health—examining how interventions influence what happens after a catastrophe in unexpected ways, how the persistence of health inequalities over centuries can be explained, how the structures of powerful institutions influence the policies they develop, how the poor deserve not only health care but high quality health care, and how caregiving and global health are urgent moral practices.

RESEARCH COURSES

Global Health and Health Policy 91: Supervised Reading and Research

David Cutler

Fall and Spring

Consent Required: Instructor

Supervised reading leading to a long term paper on a topic or topics not covered by regular courses of instruction.

Course Notes: May not be taken Pass/Fail. To enroll in the course, a written proposal and signature of advisor and chair of GHHP Committee is required. Refer to GHHP website for enrollment requirements and instructions:

<https://ghhp.fas.harvard.edu/ghhp-91>

Global Health and Health Policy 99: Research in Global Health and Health Policy

David Cutler

Spring; W 3-5

Consent Required: Instructor

Global health and health policy are interdisciplinary fields that apply the theories and methods of statistics, sociology, political science, economics, management, decision science, and philosophy to the study of population health and health care. Research from these fields influences policymaking in a variety of settings. For example, the Patient Protection and Affordable Care Act (ACA) drew upon health policy research to develop programs for improving access and quality of care in the United States. Similarly, global health research guides international institutions, such as the World Health Organization, in determining health guidelines for all countries. Global health and health policy research can also inform practices inside hospitals, initiate programs for diseases like HIV, and regulate the food and drug industries. This course introduces the fundamentals of research design and methods in global health and health policy and assists students in developing research projects and crafting policy recommendations that can impact health care systems and public health.

Course Notes:

This course fulfills the research requirement of the Secondary Field in Global Health and Health Policy, and enrollment is ordinarily limited to seniors in the GHHP Secondary Field. Underclass GHHP students may petition to take the course if all other Secondary Field requirements have been met. GHHP 99 is primarily taught by graduate students in the PhD in Health Policy program. It may not be taken pass/fail.

ECONOMICS OF HEALTH

Freshman Seminar 40k: America's \$4 Trillion Challenge: Boosting Health Care Productivity and Broadening Access

Alan Garber

Spring; TBA

Class Capacity: 12

Consent Required: Instructor

"Why does health care cost so much?" Policymakers, employers, and the public share deep frustration at high health expenditures, which are blamed for rising federal deficits, the declining competitiveness of US businesses, and the risk of financial ruin for individuals unfortunate enough to suffer a costly illness or injury. Unless health expenditures can be controlled, universal access to care is likely to remain an unattainable goal in the United States. In this seminar, we will explore the causes and consequences of the high costs of care and the range of approaches to increasing the productivity of health care. The Affordable Care Act and alternative health reform options will be critically examined for their effects on health care productivity. Students will be exposed to techniques for measuring the effectiveness and value of health care, and will become familiar with economic and clinical studies. Students will be asked to produce a mid-term outline and final paper on solutions for improving health care productivity in the US. .

Recommended Prep: Background in microeconomics at the level of first-semester Economics 10 is required. Knowledge of AP-level statistics is desirable. The course is relevant to anyone with an interest in applied economics, public policy, health care, or public health.

Course Requirements: Course open to Freshman Students Only.

GENED 1079: Why is There No Cure for Health?

David Cutler

Fall; TTh 12-1:15

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Biological Chemistry and Molecular Pharmacology 230: Principles and Practice of Drug Development

Stan Finkelstein; Peter Sorger

Fall; W 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.

Class Notes: Wed., 3:00pm - 6:00pm

Meeting Dates: Sept. 8 – Dec. 8, 2021

Meeting Location: MIT 4-237

XREG: SUP 518: The Economics of Infectious Disease

Marcella Alsan

Fall; MW 3-4:15

Class Capacity: 75

The course introduces and applies economic models and econometric tools to the analysis infectious diseases. Specific diseases will be discussed and recent research reviewed.

Recommended Prep: Prior experience with statistics and/or econometrics and/or microeconomics and/or infectious disease is helpful but not mandatory. Undergraduates may take SUP 518 as part of their economics concentration.

ENGINEERING SCIENCES AND STATISTICS

Applied Mathematics 101: Statistical Inference for Scientists and Engineers

Jeffrey Paten

Fall; MW 12:45-2

Class Capacity: 55

Consent Required: Instructor

Introductory statistical methods for students in the applied sciences and engineering. Random variables and probability distributions; the concept of random sampling, including random samples, statistics, and sampling distributions; the Central Limit Theorem; parameter estimation; confidence intervals; hypothesis testing; simple linear regression; and multiple linear regression. Introduction to more advanced techniques as time permits.

Recommended Prep: Math 21a or Applied Math 21a or equivalent.

Biomedical Engineering 110: Physiological Systems Analysis

Maurice Smith

Fall; MW 3:45-5

A survey of systems theory with applications from bioengineering and physiology. Analysis: differential equations, linear and nonlinear systems, stability, the complementary nature of time and frequency domain methods, feedback, and biological oscillations. Applications: nerve function, muscle dynamics, cardiovascular regulation. Laboratory: neural models, feedback control systems, properties of muscle, cardiovascular function.

Recommended Prep: Engineering Sciences 53 (or equivalent); Physical Sciences 12b (or equivalent); and Math 21a and Math21b (or equivalents)

Biomedical Engineering 125: Tissue Engineering

David Mooney

Spring; TBA

Fundamental engineering and biological principles underlying field of tissue engineering, along with examples and strategies to engineer specific tissues for clinical use. Students will prepare a paper in the field of tissue engineering, and participate in a weekly laboratory in which they will learn and use methods to fabricate materials and perform 3-D cell culture.

Recommended Prep: LS1a, Chem17 or 20, or biochemistry and cell biology background.

Jointly Offered with: Faculty of Arts & Sciences as ENG-SCI 230

Economics 1123: Introduction to Econometrics

Davide Pettenuzzo (Fall), Gregory Bruich (Spring)

Fall; MW 1:30-2:45

Spring; TTh 3-4:15

An introduction to multiple regression techniques with focus on economic applications. Discusses extensions to discrete response, panel data, and time series models, as well as issues such as omitted variables, missing data, sample selection, randomized and quasi-experiments, and instrumental variables. Also develops the ability to apply econometric and statistical methods using computer packages.

Course Notes: Students may take both Economics 1123 and Statistics 139 for credit. However, Statistics 139 will not count as the econometrics requirement for the economics concentration. Only one course can count towards EC credit; either Economics 1123 or Economics 1126. Both courses can count towards college credit regardless of the order they are taken.

Recommended Prep: Statistics 100 and 104.

Economics 1126: Quantitative Methods in Economics

Ellie Tamer

Fall; TTh 10:30-11:45

Topics include conditional expectations and its linear approximation; best linear predictors; omitted variable bias; panel data methods and the role of unobserved heterogeneity; instrumental variables and the role of randomization; various approaches to inference on causal relations.

Course Notes: Only one course can count towards EC credit; either Economics 1123 or Economics 1126. Both courses can count towards college credit regardless of the order they are taken. Students who fulfill the econometrics requirement with Economics 1126 and who intend to pursue Honors should note that the Honors exam assumes knowledge of the material covered in Economics 1123.

Recommended Prep: Math 18, 21a, Applied Math 21a.

Engineering Sciences 6: Introduction to Environmental Science and Engineering

Steven Wofsy, Bryan Yoon

Spring; TBA

This course will provide students with an introduction to current topics in environmental science and engineering by providing: an overview of current environmental issues, critically evaluating their underlying science and knowledge limitations, and exploring the best-available engineering solutions to some of our most pressing environmental problems. The course will emphasize the interconnected biological, geological, and chemical cycles of the earth system (biogeochemical cycles) and how human activity affects these natural cycles within each of the major

environmental compartments (atmospheric, aquatic, and terrestrial).

Course Notes: ESE 6 is also offered as EPS 6. Students may not take both for credit.

Recommended Prep: The course presumes basic knowledge in chemistry, physics, and mathematics at the high school level.

Jointly Offered with: Faculty of Arts & Sciences as E-PSCI 6

Engineering Sciences 53: Quantitative Physiology as a Basis for Bioengineering

Lindsey Moyer

Fall; MWF 11:15-12:30

This course is designed as an introduction to thinking as a bio/biomedical engineer and is recommended for first years and sophomores but open to all students. Simple mathematical models are used to represent key aspects of organ systems function. Core engineering concepts are explored through mechanical and electrical examples within the human body. The primary focus is on quantitative descriptions of organ systems function and control in terms of physical principles and physiologic mechanisms. It includes a foundation in human organ systems physiology, including cardiovascular, pulmonary, and renal systems. Emphasis will be given to understanding the ways in which dysfunction in these systems gives rise to common human disease processes.

Course Notes: Open to first-year students.

Recommended Prep: Calculus at the high school level

Course Requirements: Co-req or pre-req: Applied Physics 50a OR Applied Physics 50b OR Physical Sciences 12a OR Physical Sciences 12b OR Physics 15a OR Physics 15b OR PHYSICI 2 OR PHYSICI 3

Earth & Planetary Sciences 168: Human Environmental Data Science: Agriculture, Conflict, and Health

Peter Huybers

Fall; T 3:45-5:45

Consent Required: Instructor

The purpose of this course is to develop understanding and guide student research of human and environmental systems. In class we will explore agriculture, conflict, and transmissible disease. Study of each topic will involve introduction data, mathematical models, and analysis techniques that build toward addressing a major question at each interface: Have agricultural systems been adapted to climate change? Has drought caused conflict? And does the environment influence the spread of COVID-19? These questions are diverse, but are addressed using common analytical frameworks. Analytical approaches include simple mathematical models of feedback systems, crop development, and population disease dynamics; frequentist

statistical techniques including linear, multiple linear, and panel regression models; and Bayesian methods including empirical, full, and hierarchical approaches. You will be provided with sufficient data, example code, and context to come to your own informed conclusions regarding each of these questions. Furthermore, topics covered in class will provide a template for undertaking independent research projects in small teams. Research will either extend on topics presented in class or address other human-environmental questions. Historically, such student projects have sometimes led to senior theses or publication in professional journals.

Course Notes: The course is designed for upper-level undergraduates. Enrollment is by instructor permission. This course fulfills the EPS sub-discipline requirement of Atmosphere(s) and Oceans.

Recommended Prep: There are no specific prerequisites but a background in environmental, physical or life sciences; experience in coding or statistical analysis; and/or facility with differential equations is useful.

Jointly Offered with: Faculty of Arts & Sciences as ESE 168

Government 50: Data

TBA

Spring; TBA

This course, an introduction to quantitative political science, will teach you how to answer questions with data, how to develop questions suited to empirical research, construct hypotheses, conduct descriptive analysis using statistical summaries and data visualizations, how to model relationships, how to assess uncertainty, and how to communicate your findings. Exercises both in and out of class will require students to engage with and apply various social science concepts, and to undertake quantitative analyses of political and policy-relevant data. Each student will complete a final project.

Molecular and Cellular Biology 111: Mathematics in Biology

Elena Rivas

Fall; MWF 10:30-11:45

MCB111 is meant for biologists who want to learn mathematical principles relevant to current biological research, as well as for mathematically oriented students who want to explore applications in biology. The course theme is mathematical modeling of biological processes, with a special emphasis on probabilistic models and inference. More than half of the course covers topics on information theory, Bayesian inference, statistics, probabilistic modeling, and neural networks. The last section of the course covers dynamical systems in biology, including random walks, feedback control, and molecular population dynamics. Each week-long unit is devoted to one

specific topic, and is based in one or more scientific papers selected from the recent literature. The best way to learn in this course is through the homework. They are very hands-on, and usually require coding to implement some mathematical concept through a particular biological example. For instance, one unit is devoted to maximum likelihood methods in the context of Quantitative Trait Loci analysis; another unit explores probabilistic models in the context of inferring ancestry and recombination breakpoints from genomic reads in fly populations. More information about the course can be found at mcb111.org.

Recommended Prep: Mathematics 19 or higher.

Psychology 1900: Introduction to Statistics for the Behavioral Sciences

Patrick Mair (Fall); TBA (Spring)

Fall; MW 9-10:15

Spring; TBA

Provides a conceptual and practical introduction to statistics used in psychology and other behavioral sciences. Covers basic topics in statistics including: measures of central tendency and variability; probability and distributions, correlations and regression, hypothesis testing, t-tests, analysis of variance, and chi-square tests. Includes a lab section with instruction in statistical analysis using a computer program.

Recommended Prep: The Psychology Department requires completion of Science of Living Systems 20 or Psychology 1 or the equivalent of introductory psychology (e.g. Psych AP=5 or IB=7) before enrolling in this course.

Course Requirements: Pre-requisite: SLS20 or PSY1 or Psychology AP=5 or Psychology IB=7 or Psyc S-1

Statistics 102: Introduction to Statistics for Life Sciences

Kevin A. Rader

Spring; MW 12-1:15

Introduces the basic concepts of probability, statistics and statistical computing used in medical and biological research. The emphasis is on data analysis and visualization instead of theory. Designed for students who intend to concentrate in a discipline from the life sciences.

Course Notes: Only one of the following courses may be taken for credit: Statistics 100, 101, 102, 104.

Statistics 104: Introduction to Quantitative Methods for Economics

Kevin A. Rader

Fall; TTh 10:30-11:45

In a world where data is growing larger and more complex, it can be a challenge to turn an abundance of information into the knowledge from which sound decisions can be made. As a discipline, statistics aims to bridge the gap

between knowledge and information. This course will motivate statistical methods through data analysis and visualization, in addition to discussing the underlying theory. We will discuss topics such as study design, descriptive statistics, probability, sampling distributions, hypothesis testing, linear regression, and Bayesian inference. A wide variety of applications from the economic and social sciences will be highlighted along with examples from biology, sports, politics, and more. Students with prior exposure to introductory statistics will find some overlap of material but be exposed to new applications and learn more advanced modeling techniques. This course makes use of the statistical programming language R, but no prior knowledge of computer science is required.

Course Notes: Only one of the following courses may be taken for credit: Statistics 100, 101, 102, 104.

Course Requirements: Anti-Req: may not be taken for credit if STAT 109 or STAT 139 already complete.

Statistics 110: Introduction to Probability

Joseph Blitzstein

Fall; TTh 1:30-2:45

A comprehensive introduction to probability. Basics: sample spaces and events, conditional probability, and Bayes' Theorem. Univariate distributions: density functions, expectation and variance, Normal, t, Binomial, Negative Binomial, Poisson, Beta, and Gamma distributions. Multivariate distributions: joint and conditional distributions, independence, transformations, and Multivariate Normal. Limit laws: law of large numbers, central limit theorem. Markov chains: transition probabilities, stationary distributions, convergence.

Recommended Prep: Math 1b or equivalent or above.

ETHICS OF HEALTH

GENED 1064: Brains, Identity, and Moral Agency

Steven Hyman

Spring; TTh 10:30-11:45

Advances in brain science have the potential to diminish many forms of human suffering and disability that are rooted in disordered brain function. But what are the ethical implications involved in altering the structure and function of human brains? What's at stake when we have the ability to alter a person's narrative identity, create brain-computer interfaces, and manipulate social and moral emotion? In this course, you will ask and attempt to answer these questions, and discuss the implications of mechanistic explanations of decision-making and action for widely-held concepts of moral agency and legal culpability. This course will prepare you to be a thoughtful citizen of a world characterized by rapidly emerging understandings of human brain function, and by new technologies intended to repair or influence human brains.

Course Notes: For students who have taken MCB 80, it is contemplated that there will be a section that incorporates more advanced concepts from neurobiology.

Recommended Prep: LPS A or LS 1a, a 4 or 5 on the AP Biology exam, or equivalent experience in biology

GENED 1115: Human Trafficking, Slavery, and Abolition in the Modern World

Orlando Patterson

Spring; TTh 1:30-2:45

We often think of slavery as being a dark chapter in our past, but this is a tragic oversimplification. What defines slavery in the modern world, and what are the moral, political and social implications of its continued existence? As we explore its underpinnings, we discover that all of us may be in some way complicit in its survival. This course surveys the nature, types and extent of modern servitude such as transnational and domestic prostitution, forced marriage, labor trafficking and forced domestic labor, child soldiering and other forms of enslavement of children, organ trafficking and other health aspects of trafficking, debt-bondage, and the forced exploitation of other vulnerable groups such as refugees and stateless persons. Throughout the course, but especially in the final part, we examine anti-trafficking and anti-slavery measures and movements and ways in which you can increase awareness or become involved. You will, by the end of our exploration, be able to trace the moral and ethical arguments surrounding human slavery in its various forms, understand the ways in which this problem still affects so many people, and what can and should be done about it.

GENED 1116: Medical Ethics and History

David Shumway Jones

Fall; TTh 10:30-11:45

Students will encounter the ethical dilemmas of medical practice throughout their lives, whether with their own health, or with the health their families and friends. This course will equip them with the tools of moral philosophy so that they can recognize, critique, and craft arguments grounded in appeals to utilitarianism, deontology, or rights. But the course will focus on historical analysis of the debates so that students understand how social, economic, and political contexts have influenced moral reasoning. By clarifying their own thinking in the classroom, students will be better equipped to engage in the debates and contribute to the ongoing efforts by medicine to relieve human suffering.

Ethnicity, Migration, Rights 147: COVID-19, inequality and the Latinx community

Americo Mendoza-Mori

Fall; T 3-5:45

Class Capacity: 15

Consent Required: Instructor

When the coronavirus pandemic started to hit the world in 2020, it gave the wrong impression that it would affect everyone the same way, acting as a 'great equalizer'. However, the effects of COVID-19 exacerbated structural injustices and the impact varied dramatically different depending on race, gender, class. According to data from the Centers for Disease Control and Prevention (CDC) in May 2021, Hispanics/Latinos were twice as likely to get the virus in comparison to white adults, and 2.3 times more likely to die from it. Even as vaccines have become available, their distribution has also been affected by disparities of access.

For this class we will analyze discursivities that have been exposed by the pandemic and have since become topics of ethical and social reevaluation: health disparities, the distribution of labor, housing and transportation, language access, environmental racism (including activism against anti-Asian and anti-Black violence). At the same time, we will explore public policy and solidarity grassroots initiatives that have provided community support and programmatic responses on healthcare, social and racial justice, and climate issues to the future of US society.

Community testimonies and guest speakers, multimedia content, interdisciplinary readings, and class debates are intended to encourage reflection and to learn from underrepresented voices of the pandemic. This is a speaking seminar, open to all students, that will promote oral communication and critical thinking skills through discussions, projects, and prepared presentations.

Global Health and Health Policy 70: Global Response to Disasters and Refugee Crises

Stephanie Kayden, Michael VanRooyen

Spring; Th 12:45-2:45

Class Capacity: 30

Consent Required: Instructor

Climate change, urbanization, and conflict mean that global disasters are on the rise. How should the world respond when disasters force people from their homes? How can we better help the world's refugees? This course examines the past, present, and future of the international humanitarian response system. We will explore how Doctors Without Borders, the United Nations, the Red Cross, and other aid agencies came to be and how global response standards, international humanitarian law, and new technologies are shaping worldwide disaster relief.

Through interactive discussions and case studies, students will learn how aid workers interact with governments, militaries, and civil society to provide refugee aid. At the end of the course, students can choose to live the refugee experience during a large-scale, weekend outdoor simulated humanitarian response training program together with other students and professional aid workers from around the world.

Course Notes: Lotteried course, enrollment limited to 30.

Government 94gk: The Politics and Ethics of Medical Care

Gabriel Katsh

Fall; Th 3-5:45

Class Capacity: 16

Consent Required: Instructor

This course is an introduction to medical ethics and the ways in which political theory can inform our understanding of the moral and political dimensions of medical care. Using case studies as a launching point, we will explore ideas about autonomy, paternalism, beneficence, and distributive justice, and their application to issues such as informed consent, medical privacy, and the right to refuse care. The Fall 2021 iteration of the course will focus in particular on ethical and policy dilemmas that have arisen in the context of the coronavirus pandemic, including questions about the distribution of scarce resources, the health effects of inequality, and balancing the needs of public health with concerns about individual liberty. Readings include classics of moral and political philosophy, writings by contemporary medical ethicists, Supreme Court decisions, and some empirical and historical studies.

History of Science 2953: Bioethics, Law, and the Life Sciences

Sheila Jasanoff

Spring; TBA

Class Capacity: 30

Consent Required: Instructor

Seeks to identify and explore salient ethical, legal, and policy issues - and possible solutions - associated with developments in biotechnology and the life sciences.

Course Notes: Offered jointly with the Kennedy School as IGA-515. Cannot be taken for credit by students who have already taken IGA-515.

Sociology 1106: Humanitarian Activism and Civil Society

Shai Dromi

Spring; TTh 9-10:15

When global crises strike, humanitarian nongovernmental organizations – NGOs – spring to action, offering emergency medical services, basic necessities, expertise, and innovation to affected communities around the world. Yet COVID-19 brings unprecedented challenges—and unprecedented opportunities—to humanitarian endeavors. Humanitarian workers are now working globally to distribute personal protection equipment in disadvantaged communities, trace the spread of coronavirus in countries with sparse public health resources, support countries with weakened hospital systems, and advocate for an equitable distribution of a future vaccine.

This course provides a comprehensive view of humanitarian organizations and activism from a sociological perspective. We will examine the origins of organized humanitarian activism and the dilemmas and challenges that NGOs face. We will investigate the consequences, justifications, and limitations of humanitarian work. COVID-19 will be a central study case for us, and we will also look at case studies from the Kosovo War, the Nigerian Civil War, and the 2004 Indian Ocean Tsunami. Students will be assigned specific regions to research over the course, and will create visual representations of the conditions and humanitarian activities in their assigned region. The course will include a virtual “hackathon” with the Bok Center's Learning Lab Studio where students will learn visual media skills for this purpose.

Sociology 1131: Philanthropy and Nonprofit Organizations

Shai Dromi

Fall; MW 3-4:15

Class Capacity: 50

Consent Required: Instructor

When crises strike, nonprofit organizations spring to action, offering their resources, expertise, and innovation to

affected communities. Yet COVID-19 brings unprecedented challenges—and unprecedented opportunities—to philanthropic endeavors. Indeed, aside from supporting medical research on COVID-19, nonprofit organizations have been providing medical care, distributing personal protective equipment (PPE), helping address loss of employment and food insecurity, and advocating for global equity in vaccine distribution, among other tasks. This course partners with the Lemann Program on Creativity and Entrepreneurship (LPCE) in order to provide students with a unique opportunity to experience first-hand how philanthropists and nonprofit organizations are helping address the global effects of this global pandemic. On the theoretical side, the course will examine the workings of philanthropy and of nonprofit organizations, using different sociological perspectives and a series of case studies. Alongside the theoretical content, students will form groups and will develop their own nonprofit ventures to address the social impact of COVID-19. Student ventures will receive startup seed funding and, at the end of the course, will compete over additional seed money. The course will include a series of guest lectures and workshops on entrepreneurship to support student venture development.

XREG: HSPH GHP 265: Ethics of Global Health Research

Richard Cash

Spring 2; MW 3:45-5:15

Class Capacity: 50

This course is designed to expose students to the key ethical issues that may be encountered in the course of conducting global health research. Using case presentations and discussion-based class sessions, students will have the opportunity to begin developing their own tools for dealing with these important issues in an applied context.

Course Note: Required for GHP SM2 research students.

Course is Restricted: GHP SM2 research students. Seats will be made available to other students if room is available. Students outside of HSPH must request instructor permission to enroll in this course.

Note: This course provides 2.5 credits. In order to receive credit equivalent to a course in FAS, a student must take two 2.5-credit HSPH courses.

XREG: HSPH GHP 288: Introduction to Health and Human Rights

Stephen P. Marks

Fall 2; MW 2-3:30

Class Capacity: 32

The aim of this course is to introduce students to the application of the human rights framework to a wide range of critical areas of public health. Through lectures, cases and guest speakers, students will become familiar with the human rights perspective as applied to selected public health

policies, programs and interventions. The course clarifies how human rights approaches complement and differ from those of bioethics and public health ethics.

Among the issues to be considered from a human rights perspective are the bioethics, torture prevention and treatment, infectious diseases, violence prevention and responses, genetic manipulation, access to affordable drugs, community-based health management and financing, child labor, aging, and tobacco control.

Course requirements are active participation in class discussion (25%), presentation of a paper (10%) and quality of the term paper (65%).

Course Requirements: Students outside of HSPH must request instructor permission to enroll in this course.

Note: This course provides 2.5 credits. In order to receive credit equivalent to a course in FAS, a student must take two 2.5-credit HSPH courses.

XREG: HSPH ID 250: Ethical Basis of the Practice of Public Health

Daniel Wikler Ole Norheim

Fall 1; MW 8-9:30am

Class Capacity: 37

This course serves as an introduction to ethical issues in the practice of public health. Students will identify a number of key ethical issues and dilemmas arising in efforts to improve and protect population health and will become familiar with the principal arguments and evidence supporting contesting views. The class aims to enhance the students' capacity for using ethical reasoning in resolving the ethical issues that will arise throughout their careers.

Unlike courses in medical ethics, which mainly examine ethical dilemmas facing individual clinicians, the population-level focus of this course directs our attention to questions of ethics and justice that must be addressed at the societal level. These include: What social response is required of a just society to the needs of its members for protecting and restoring health? Is population health something other than the aggregate of the health concerns of the individuals who make up a society at a given time? And what are the ethical implications of the answers? When are inequalities in health inequitable, and what priority should be assigned to reducing disparities in health when pursuing this goal might compromise the effort to maximize population health? Which ethical choices, if any, are unavoidable in developing the methodologies for measurement of health and of the global burden of disease? Which ethical choices if any are unavoidable in developing and using methods for priority-setting such as cost-effectiveness analysis and cost-benefit analysis? Are the ethical commitments of the profession of public health consistent with some methods and not others? Should the institution of universal health coverage be guided by ethical

precepts and if so, what are these values and how should they guide policy? Can and should public health's dedication to improving population health conflict with the priorities of some individuals whose choices do not reflect such high priority for health? Should these individual preferences always be respected? Are there effective strategies that pursue population health in the face of such conflicts while preserving the individual's freedom to make unhealthy choices? How should responsibility for poor health be assigned, and what are the ethical implications of this assignment for poor health due to health problems due to smoking, obesity, and other unhealthy behavior? To the extent that the socio-economic health gradient reflects differences in how well people take care of themselves are these disparities in health individual failings rather than social injustices?

Class Notes: A course materials fee may apply for this course. An upper estimate is listed below, and the final materials fee will be communicated to enrolled students at the beginning of the term. For more information and a list of past years' materials fees for the current semester's courses, please visit the Curriculum Center website. [Estimated Non-Textbook Course Material Fee:< \$25]

Course Requirements: Students outside of HSPH must request instructor permission to enroll in this course.

Note: This course provides 2.5 credits. In order to receive credit equivalent to a course in FAS, a student must take two 2.5-credit HSPH courses.

HEALTH AND DEMOGRAPHY

GENED 1063: World Health: Challenges and Opportunities

Sue J. Goldie

Spring; MW 10:30-11:45

Class Capacity: 200

Consent Required: Instructor

Extraordinary changes in the world present both risks and opportunities to health—unprecedented interconnections across borders, rapidly shifting global demographics, and changing patterns of diseases and injuries. This course will challenge your assumptions about the world’s populations, as you discover surprising similarities and unexpected differences between and within countries. Approaching the concept of health as a fundamental prerequisite for building strong societies, we will explore its connection to human rights, international relations, and sustainable development. Using case examples of contemporary health challenges, we explore the influence of social, political, and environmental determinants on health, particularly transnational risks associated with globalization. We consider solutions from an array of perspectives, contributions from within and outside the health sector, and interventions at the local, national and global levels. By the end of the course, you will be equipped to thoughtfully analyze important health challenges and appreciate how evidence is contextualized and translated to policy and action.

Global Health and Health Policy 30: Global Oral Health: Healthy Teeth, Healthy Societies

Brittany Seymour

Fall; MF 10:30-11:45

Class Capacity: 34

Consent Required: Instructor

Did you know that one of the strongest indicators of a healthy society is the health of its teeth? Everyone has teeth, but most people in the world don’t have access to affordable dental care. This discussion-based course assesses current global health policies and approaches for addressing pressing health challenges despite resource constraints and severe political neglect. It aims for students to be competent in incorporating the global burden of oral diseases into foundational concepts of global health and world development. These include how oral diseases are associated with globalization, poverty, infectious and non-communicable diseases, maternal and child health, mental health, nutrition, tobacco, alcohol, urban and rural infrastructures, climate change, and the environment. This course demonstrates how complete health and an end to global poverty are not possible without including oral health in the global health and development agenda.

Course Notes: Students who complete GHHP 30 may apply to participate in an experiential learning opportunity in San Vito, Costa Rica over spring break. Since slots are limited, there will be a lottery.

Sociology 1046: Life and Death by Design

Jason Beckfield

Fall; MW 10:30-11:45

In this course, we will study health differences between social groups. We will begin by examining the extent to which health is unevenly distributed across groups defined by nationality, neighborhood, race, gender, and class - differences highlighted in stark terms by the COVID-19 pandemic. We will then seek to pinpoint the reasons for these disparities with a detailed analysis of the pathways through which these factors are linked to health status. Finally, we will discuss new research on the sociology of population health that shows how health disparities depend on meso- and macro-scale causes like neighborhoods, social policy arrangements, global organizations, and climate change.

Course Notes: May be used as an introductory course when taken for letter grade, or elective.

HEALTH, CULTURE, AND SOCIETY

Freshman Seminar 23k: Insights from Narratives of Illness

Jerome Groopman

Spring; M 12:45-2:45

Class Capacity: 12

Consent Required: Instructor

A physician occupies a unique perch, regularly witnessing life's great mysteries: the miracle of birth, the perplexing moment of death, and the struggle to find meaning in suffering. It is no wonder that narratives of illness have been of interest to both physician and non-physician writers. This seminar will examine and interrogate both literary and journalistic dimensions of medical writing. The investigation will be chronological, beginning with "classic" narratives by Tolstoy, Chekhov, and Kafka, and then moving on to more contemporary authors such as William Carlos Williams, Richard Selzer, Oliver Sacks, Susan Sontag, and Philip Roth. Controversial and contentious subjects are sought in these writings: the imbalance of power between physician and patient; how different religions frame the genesis and outcome of disease; the role of quackery, avarice, and ego in molding doctors' behavior; whether character changes for better or worse when people face their mortality; what is normal and what is abnormal behavior based on culture, neuroscience, and individual versus group norms. The presentation of illness in journalism will be studied in selected readings from the *New York Times*' and *Boston Globe*'s Science sections, as well as periodicals like the *New Yorker*, *The New York Review of Books*, *Harper's*, and the *Atlantic Monthly*. The members of the seminar will analyze how the media accurately present the science of medicine or play to "pop culture." The seminar will study not only mainstream medical journalists, but so called alternative medical writers such as Andrew Weil and celebrity health voices like Gwyneth Paltrow. Patients with different diseases will be invited to speak to the members of the seminar about their experiences. Students will try their hands at different forms of medical writing, such as an editorial on physician-assisted suicide that would appear in a newspaper and a short story that describes a personal or family experience with illness and the medical system.

Course Requirements: Course open to Freshman Students Only.

Freshman Seminar 25n: Finding Connections: Perspectives on Psychological Development and Mental Illness

Nancy Rappaport

Fall; W 3-5

Class Capacity: 12

Consent Required: Instructor

The seminar's challenge will be to deepen our understanding of human development and how individuals cope with serious emotional or social difficulties (neglect, bipolar disorder, autism, depression, schizophrenia). We will use multiple perspectives: medical observations and texts that provide practical knowledge (e.g. The New England Journal of Medicine review articles), narrative readings to understand how patients experience the meaning of illness from the inside out (e.g. The Center Cannot Hold), visitors who will discuss their experience with mental illness, and how development-related mental illness is portrayed in the press (e.g. The New Yorker articles). We will start with the mental life of babies and how scientists interpret infants' nonverbal ways of finding safety and security. This begins the journey of our understanding fundamental needs for tenderness, holding, and making meaning. Understanding how conditions such as autism, depression, and schizophrenia are described in clinical research and literature will help us to appreciate the biological vulnerabilities and relational patterns that may disrupt the human connection. We will examine the resourcefulness required for both fragility and resiliency. Throughout the seminar, the instructor, as a practicing child and adolescent psychiatrist, will bridge the gap between research findings, clinical applications, and everyday insight.

Course Requirements: Course open to Freshman Students Only.

Freshman Seminar 710: The Heart of Medicine: Patients & Physicians & Experience of Serious Illness in the Age of COVID-19

Susan Block

Fall; W 3-5

Class Capacity: 12

Consent Required: Instructor

Sickness and death are universal human experiences. Although the COVID-19 pandemic has brought this reality home, in many difficult ways, to all of us over the past 2 years, thinking about our own losses and vulnerability and that of people we love is often uncomfortable. This terrible year has also created many opportunities for us to grow, as individuals and as a society. Building on our collective experiences of the past year, we will explore our own perspectives and experiences with serious illness and death; examine the vulnerabilities in our health system and our society that also contribute to the

challenges in dealing with serious illness and death, and seek to process these perspectives and experiences as a way of learning to live a more meaningful life, strengthening relationships, helping us be better caretakers of people we love, and of people whom we serve in a professional role. We will use our experiences and observations during the COVID-19 pandemic as one source of data to inform a larger understanding of how humans deal with loss and vulnerability by examining, from multiple perspectives, the social, cultural, psychological, economic, and spiritual factors that influence the experience of serious illness. The seminar will draw on core readings from the humanities, social sciences, and medicine, including numerous readings related to COVID-19 to deepen understandings of how people experience and live and die with a serious illness. Opportunities for discussion, reflection, live interviews, case analysis, and experiential exercises will take place in class.

Course Notes: If circumstances permit, additional field learning opportunities (e.g., participation in hospital-based teaching rounds) will also be available outside of class.

Course Requirements: Course open to Freshman Students Only

GENED 1053: The Global Heart Disease Epidemic: Stopping What We Started

Richard Lee

Fall; MW 3-4:15

Class Capacity: 60

Consent Required: Instructor

Heart diseases have killed occasional humans since ancient times, but only in the past century have heart diseases become epidemic throughout the world. In fact, the first description of a heart attack in a human was not until 1912. In the current century, heart diseases will be the leading global cause of death, and the majority of those heart disease deaths will actually occur in the developing world. The epidemic of heart disease has been driven by many social, economic and technological events. Some of these events have been dramatically detrimental to human health, such as the accidental invention of the American cigarette by a slave in North Carolina in the 19th Century—an invention that is projected to kill one billion people between 2000 and 2100. Other events, such as advances in public health and safety, have been beneficial by extending lifespan and preventing early death, but they have also allowed age-related heart diseases to explode. Technological advances have improved our economic productivity but also led to changes in our lifestyles that promote heart diseases. In this course, we will consider the complex relationship of health and society by examining the epidemic in common heart diseases. We will explore how major lifestyle factors such as tobacco, alcohol, exercise and diet affect health, and

we will also consider how economics and politics powerfully influence health. We will also discuss the role of government and our obligations to each other, and to future generations.

GENED 1089: The Border: Race, Politics, and Health in Modern Mexico

Gabriela Soto Laveaga

Spring; MW 9-10:15

Why does the Mexico-U.S. border continue to be a space for debate and controversy? This course examines how the creation of the U.S.-Mexico border in 1848 shaped modern Mexican society from the nineteenth century to our present. For many, the border served (and serves) as a protective barrier from poverty, violence, and, especially, disease. By the early twentieth century many Mexican bodies were perceived as “alien,” “illegal,” and in need of patrolling. Yet these descriptions were also used by Mexican politicians to describe and isolate groups such as Indigenous and Chinese within Mexico. By examining, for example, Mexican public health campaigns, response to epidemics, and how Mexican ideas of race and health played out within Mexico we can better understand the U.S.-Mexico border today.

GENED 1093: Who Lives, Who Dies, Who Cares? Reimagining Global Health

Arthur Kleinman, Salmaan Keshavjee, Anne Becker, Paul Farmer,

Fall; TTh 10:30-11:45

If you are sick or hurt, whether you live or die depends not only on biological factors, but social ones: who you are and where you are, what sort of healthcare system is available to help you survive, and what kind of care is available to help you recover, if society believes you deserve it. The global coronavirus pandemic illustrates with dramatic urgency the role social forces play in patterning health inequities and determining individual fates. The vulnerabilities of those most likely to get sick and to die from Covid-19 stem from the ongoing effects of systemic racism on racialized subjects, the devaluation of eldercare and precarity of low-paid work under neoliberal forms of governance, and enduring material effects of colonial-era power structures that render health care systems dangerously weak or inaccessible for many communities. Now, as ever, it is imperative to develop frameworks and methodologies to identify and to intervene effectively in harmful social configurations that cause illness and suffering.

Most medical research narrowly focuses on the biological basis of disease, but this course takes a novel biosocial approach to reveal how governments, institutions, and histories shape health and well-being, how poverty and racism get into someone’s lymph nodes, how cost-saving measures manifest as tuberculosis in someone’s lungs. In

doing so, the course challenges conventional assumptions within the field of global health—examining how interventions influence what happens after a catastrophe in unexpected ways, how the persistence of health inequalities over centuries can be explained, how the structures of powerful institutions influence the policies they develop, how the poor deserve not only health care but high quality health care, and how caregiving and global health are urgent moral practices.

African and African American Studies 197: Poverty, Race, and Health

David Williams

Fall; T 12:45-2:45

This course critically examines the health status of the poor, and of African Americans and other socially disadvantaged racial and ethnic groups in the US. Attention will be focused on the patterned ways in which the health of these groups is embedded in the social, cultural, political, and economic contexts, and arrangements of US society. Topics covered include the meaning and measurement of race, the ways in which racism affects health, the historic uses of minorities in medical research, how acculturation and migration affects health, and an examination of the specific health problems that disproportionately affect nondominant racial groups.

Anthropology 1679: Madness, Incarceration and Capitalism

Kaya Williams

Spring; TBA

Class Capacity: 13

Consent Required: Instructor

By all counts, rates of mental illness in the United States have been rising dramatically over the past few decades. With a private healthcare system that guarantees adequate healthcare only to the country's ruling class, mental illness in the United States is largely treated within the country's jails and prisons. And yet, the violence of the United States' system of policing and incarceration is psychologically damaging — making the country's jails, prisons, and detention centers paradoxically both the cause of and primary solution to the country's rising rates of mental illness. The goal of this course is to better understand this paradox, and to begin to build a shared language to work our way out of its restrictive grasp. The course will draw on writers and thinkers in anthropology, sociology, history, black studies, and disability studies in an attempt to grasp the slippery concepts of madness, capitalism, and captivity

and to understand the ways in which these categories interact in the U.S. today.

Anthropology 1879: Deep China: What Medical Anthropology and Psychiatry Contribute to the Study of China Today

Arthur Kleinman

Spring; TBA

Consent Required: Instructor

What do accounts of depression, suicide, substance abuse, sexually transmitted diseases, SARS, HIV/AIDS, starvation and the personal and family trauma of political violence teach us about China and the Chinese over the last few decades?

Course Notes: For advanced undergraduates. Instructor permission required.

History of Science 1445: Medicine and Health in America

Eram Alam

Spring; TBA

This course surveys major historical developments in medicine and health in the United States during the modern period. We will analyze medicine and health within social, cultural, and political contexts to better understand the relationship between medicine and power. Topics will include: citizenship, nationalism, and imperialism; race, gender, and the body; capitalism and the medical marketplace; professionalization, expertise, and authority; crises and epidemics; technology and therapeutics; and questions of care.

Mind, Brain, and Behavior 980p: The Role of Music in Health and Education

Lisa Wong

Fall; Th 3-5

Class Capacity: 15

Consent Required: Instructor

Music shapes the course of human history at both a micro and macro scale; The "universal language" has the power to connect people who share no other common ground. Its power to bind people together is intuitively understood, but only through recent neuroimaging advances over the past few decades have scientists been able to move past intuition to reveal its impact on the brain. In this course, we will examine the exciting progress of the fields of music, science, and social science, through a variety of lenses, and meet some of the experts in the field. Who are the key investigators and practitioners in today's emerging music/brain landscape? What are the latest discoveries about how music affects the brain? How does how we hear and listen impact our perception of music? Who are some of the key influencers in music and social change? This course invites students to deepen their relationship with music,

exploring different aspects of the art form through the lens of neuroscience, education, medicine, music therapy, public health and social justice. By the end of this course, the learner will (1) understand the effect of music on the developing brain; (2) understand the mechanism of hearing music; (3) consider the pathophysiology of disordered movement and hearing and how music can be used therapeutically; and (4) understand how other disciplines can add to their knowledge of the therapeutic uses of music. Given the transdisciplinary nature of the work, students will be introduced to literature from different disciplines and use these resources to explore their own individual interests in music Course Notes: Preference to juniors in MBB tracks or MBB secondary field.

Course Notes: Course inquiries to Dr. Wong at lisamwonghu@gmail.com. Preference to juniors in MBB tracks or MBB secondary field. Admission to this course is via lottery; see <https://mbb.harvard.edu/seminars> for lottery details.

Psychology 980ad: Psychopathology and the Family

Jill Hooley; Katherine Powers

Fall; T 12-2

Class Capacity: 16

Consent Required: Instructor

In this course, we will explore how the family impacts psychopathology, including relapse, recovery, and resilience, for a member with a mental disorder. We will examine the relationship between the family and mental health conditions like anxiety, autism, depression, personality disorders, and schizophrenia from a life course and a family systems perspective. We will also examine these relationships by discussing the biopsychosocial features of the family that impact child and adolescent psychopathology. The course will focus on contemporary approaches to family life (e.g., dual-earner families, gender equality, LGBTQ+ families, etc.), and the role these approaches play in family functioning. The course will also examine the impact the current COVID-19 pandemic is having on family systems, as well as the increased need for telehealth services.

Class Notes: The instructor is John Knutsen, john_knutsen@g.harvard.edu.

Recommended Prep: The Psychology Department requires completion of Science of Living Systems 20 or Psychology 1 or the equivalent of introductory psychology (e.g. Psych AP=5 or IB =7 or Psyc S-1) and one of PSY 18 or PSY 1861 before enrolling in this course; or permission of instructor.

Psychology 1009: Psychology of Women

Nicole Noll

Spring; TBA

Class Capacity: 16

Consent Required: Instructor

How does being a woman affect our behavior, our evaluations of ourselves, and our interactions with others? This course examines psychological science on women and girls in western industrialized societies, addressing such topics as gender stereotypes, girlhood, women and work, relationships, pregnancy and motherhood, mental health, violence against women, and women in later adulthood. We will consider these topics through an understanding of gender as a social construction, being mindful of the intersections of gender, sexuality, class, and race. Although focused on women's lives and experiences, this course is highly relevant to people of all genders.

Recommended Prep: The Psychology Department requires completion of Science of Living Systems 20 or Psychology 1 or the equivalent of introductory psychology (e.g. Psych AP=5 or IB =7 or Psyc S-1) and at least one foundational course from PSY 14, PSY 15, PSY 16, or PSY 18 before enrolling in this course; or permission of instructor.

Course Requirements: SLS20 or PSY1 or Psychology AP=5 or Psychology IB=7 or Psyc S-1 AND PSY14 or PSY15 or PSY16 or PSY18

Psychology 1812: Intercultural Perspectives on Trauma

Mayron Pereira Piccolo Ribeiro

Spring; TBA

Class Capacity: 20

Consent Required: Instructor

Traumatic experiences vary in part due to the different adversities and lived experiences present in cultures throughout the world. In this course, we will look at psychological trauma and post-traumatic stress through a multicultural lens, beyond the Western perspective. Can a global model of trauma fit all cultures? If not, how should we properly assess trauma using culturally valid methods? What is the impact of the cultural experience on perceiving an event as traumatic? How do social and psychological factors associated with culture shape resilience to trauma? How does culture affect attitudes towards mental health care and willingness to seek professional treatment? We will answer these questions and more by investigating topics such as acid attacks in India, intimate partner violence in North Africa, and genital mutilation in Somalia.

Recommended Prep: The Psychology Department requires completion of Science of Living Systems 20 or Psychology 1 or the equivalent of introductory psychology (e.g. Psych AP=5 or IB =7 or Psyc S-1) and one of PSY 18 or PSY 1861 before enrolling in this course; or permission of instructor.

Course Requirements: SLS20 or PSY1 or Psychology AP=5 or Psychology IB=7 or Psyc S-1 AND PSY18 or PSY1861

Psychology 1845: Stigma, Discrimination, and Health

Mark Hatzenbuehler

Spring; TBA

What is stigma? How do stigmatized identities and conditions differ from each other? Why do we stigmatize? What are the consequences of stigma for cognitions and emotions, for social relationships, and for health? Through what mechanisms—individual, interpersonal, and structural—does stigma operate to produce adverse health outcomes? How do stigmatized individuals cope with and resist stigma? How can we reduce stigma and its negative effects? In this course we will consider stigma as a fundamental cause of health inequalities across a broad range of phenomena, including (but not limited to) mental illness, sexual and gender diversity, weight, disability, aging, poverty, and immigration status. Students can expect to examine stigma as a predicament that affects nearly all individuals at some point in the life course, and to develop expertise in an individual stigma that is relevant to their personal, academic, and professional interests through a series of focused course assignments.

Recommended Prep: The Psychology Department requires completion of Science of Living Systems 20 or Psychology 1 or the equivalent of introductory psychology (e.g. Psych AP=5 or IB =7 or Psyc S-1) before enrolling in this course; or permission of instructor.

Course Requirements: Pre-requisite: SLS20 or PSY1 or Psychology AP=5 or Psychology IB=7 or Psyc S-1.

Spanish 61ph: Spanish for Public Health

Adriana Gutierrez

Spring; TBA

An advanced language and culture class that examines literature, documentary, films, journalistic articles and other media portraying the cultural, political, sociological and financial impact of Public Health issues in Latin America. Students' linguistic competency is developed through discussion of the issues of public health. Grammar reviews, and weekly writing assignments. Students will also choose a specific project for a Public Health issue in Latin America and research its possible outcome and cultural, social, political, economic consequences.

Course Notes: Not open to auditors. May not be taken Pass/Fail but may be taken Sat/Unsat by GSAS students.

Recommended Prep: Prerequisite: A score between 751 and 780 on the SAT II test or Harvard Placement test, a Spanish 50-level course, or permission of course head. Students are allowed to take a maximum of two courses at the 60-level in Spanish, not including Spanish 60.

Women, Gender & Sexuality 1421: Medical Management of the Female Body

Sarah Richardson

Fall; W 12:45-2:45

Class Capacity: 15

Consent Required: Instructor

This course examines how Western medical knowledge, practices, and institutions define female health and normality and manage diseased and gender-variant female bodies. How, for instance, does medicine conceive of the female body as a medical problem or mystery and how do race, class, and sexuality inflect these conceptions? Topics include: "female maladies," medicalization of childbirth and the pregnant body, medical management of transgender and intersexed bodies, ideals of fitness, cosmetic surgery, disability, and pharmaceutical marketing.

HISTORY AND PRACTICE OF MEDICINE

Freshman Seminar 24g: A Brief History of Surgery

Frederick Millham

Fall; Th 6-8:45

Class Capacity: 15

Consent Required: Instructor

The history of surgery begins with the Hippocratic physicians whose principles were based, at least partly, on observation and measurement. However, surgical thinking for first three quarters of the “modern era” was dominated by Galen of Pergamum who, “fooled by his monkeys,” established a school thought as false as it was tightly held. The exposure of Galen’s errors by Vesalius in 1543 and Harvey in 1628 began a Medical Enlightenment. It would take until the 19th century for the next era of discovery to begin. During this time, the pace and significance of medical discovery increase, yet adoption of good ideas, like antisepsis, seems to take much too long, while bad ideas find adherents in spite of poor or no supporting evidence. Throughout this period, the ghost of Galen continues to haunt hospitals and battlefields. It will not be until the 1930’s that Galenism is banished from the wards. Our study will track this history and conclude with a consideration of the management of combat casualties from the time of the first “modern” surgeon, Ambrose Pare, to that of contemporary forward surgical teams in Afghanistan and Iraq. The seminar will consist of weekly discussion, informed by assigned reading and independent inquiry. We will visit the site of the first use of ether anesthesia, and duplicate William Harvey’s experiments in the anatomy lab. From time to time we will be joined by other doctors with expertise in specific areas such as infectious disease, combat surgery and anatomy.

Course Requirements: Course open to Freshman Students Only

GENED 1175: Vaccines: History, Science, Policy

Allan Brandt; Galit Alter; Ingrid Katz

Fall; TTh 9-10:15

Vaccination is among the oldest and most effective of medical interventions, yet paradoxically, it is also one of the most controversial. In its modern form, it has been used for centuries to prevent some of the most virulent infectious scourges of our time. Today, immunization is one of the most successful and effective interventions available to medicine and public health, reducing morbidity and mortality across the world. In this interdisciplinary course, you will examine the history of vaccination using a number of specific episodes in which it was utilized to prevent illness, disability and death, as well as the social and political controversies that vaccines have generated. You

will also be introduced to the modern science of immunology and virology, examining the research that has resulted in the development of effective vaccines.

Additionally, you will explore current scientific theories and techniques for developing new vaccines and enhancing their durability. Finally, this course will investigate the complex ethical and policy issues that vaccines continue to generate. What is the nature of compulsory measures for vaccination, vaccine hesitancy and skepticism, and anti-vaccination movements? What are the moral and ethical principles for ensuring equitable access to vaccines in local communities, nations, and globally? The course will encourage a broad interdisciplinary exploration of vaccines to inform our current understanding of the Covid-19 pandemic, while also examining critical issues in science, life-saving technologies, questions of individualism and the good of the community, as well as fundamental issues of global health equity.

Anthropology 2797: Theory and Practice of Social Medicine

Salmaan Keshavjee; Mercedes Becerra; David Shumway Jones; Lindsey Zeve

Fall; M 12-2:45

Class Capacity: 15

Consent Required: Instructor

Social medicine is a field of study and practice that uses insights from the social sciences to improve medical theory and the delivery of health care in communities and global health. This course will explore the historical foundations of social medicine in the 19th and 20th centuries in Europe, Latin America, Asia, Africa, and North America. It will then examine case studies of social medicine in the contemporary world that confront the challenges of post-colonialism, neoliberalism, racism, and care-giving.

Course Notes: Advanced undergraduates welcome

Classical Studies 165: Medicine in the Greco-Roman World

Mark Schiefsky

Spring; T 12:45-2:45

Theories and practices of health and healing in the ancient Greco-Roman world, with special emphasis on the relationship of learned medicine to philosophy and other healing traditions.

East Asian Studies 170: Medicine and the Self in China and in the West

Shigehisa Kuriyama

Spring; TBA

Comparative historical exploration of the striking differences and unexpected similarities between traditional conceptions of the body in East Asian and European

medicine; the evolution of beliefs within medical traditions; the relationship between traditional medicine and contemporary experience.

Global Health and Health Policy 50: The Quality of Health Care in America

Anupam Jena

Spring; TTh 3-4:15

Class Capacity: 42

Consent Required: Instructor

Offers information and experiences regarding the most important issues and challenges in health care quality. Overview of the dimensions of quality of care, including outcomes, overuse, underuse, variation in practice patterns, errors and threats to patient safety, service flaws, and forms of waste. Each session focuses on one specific issue, exploring patterns of performance, data sources, costs, causes, and remedies. Explores desirable properties of health care systems that perform at high levels in many dimensions of quality.

Course Notes: Lotteried course, enrollment limited to 42.

History of Science 1471: War and Medicine

Joelle Abi-Rached

Fall; F 9:45-11:45

Class Capacity: 20

Consent Required: Instructor

This course explores how modern warfare has shaped the development of medicine from the Crimean War in the 1850s to the Syrian Civil War today. Among the topics covered are war-related discoveries (aseptic surgery, prosthetics), new mental ailments (Shell-Shock, PTSD), the rise of medical humanitarianism (Red Cross, Médecins Sans Frontières), and the long-term health costs of war. What has been the impact of war on medicine and the medical profession? Why are war-related psychiatric disorders deemed controversial? Should physicians treat the wounds of enemy soldiers and civilians as impartially as they treat those of their own side? And, why should we care?

History of Science 1770: Broken Brains: A Patient-Centered History

Anne Harrington

Fall; Th 3-5:45

Class Capacity: 25

Consent Required: Instructor

An exploration of the complex relationship between doctors and scientists who study and treat different kinds of “broken brains,” the patients they study and treat, and larger public conversations about being human in today’s neurological society. Topics include iconic cases of brain damage that catalyze new scientific understandings (like the case of H.M.), the study of brain damage in war, the emergence of

writings (including memoirs and novels) that attempt to describe “what it is like” to suffer from disorders like autism and Alzheimer’s, and controversies over recent efforts to see psychiatric disorders like depression as simple products of a chemically “broken brain.”

Course Notes: Enrollment limited to 25.

Psychology 980JO: Understanding Autism

Jill Hooley; Katherine Powers

Spring; TBA

Class Capacity: 16

Consent Required: Instructor

One in 50 children is currently diagnosed with autism spectrum disorder (ASD), yet we still do not know what causes it, or how best to treat it. This course provides students with a broad, interdisciplinary exploration of ASD from infancy through adulthood. We explore three major themes: 1) the psychological and neurological drivers of ASD, including deficits in social cognition, executive function and perception; 2) the epidemiology and clinical practice of ASD, including diagnosis and treatment modalities, and individual and sex/gender differences; and 3) the personal and societal impact of ASD, including discussion of quality of life, neurodiversity, policy and advocacy. We will also explore the impact of the current COVID-19 pandemic for individuals with ASD and their families.

Course Notes: The instructor is John Knutsen, john_knutsen@g.harvard.edu.

Recommended Prep: The Psychology Department requires completion of Science of Living Systems 20 or Psychology 1 or the equivalent of introductory psychology (e.g. Psych AP=5 or IB =7 or Psyc S-1) and at least one foundational course from PSY 14, PSY 15, PSY 16, or PSY 18 before enrolling in this course; or permission of instructor.

Course Requirements: SLS20 or PSY1 or Psychology AP=5 or Psychology IB=7 or Psyc S-1 AND PSY14 or PSY15 or PSY16 or PSY18

Religion 1335: Ancient Greek Sanctuaries: Healing and Medicine

Kimberley Patton

Fall; Th 3-5

Class Capacity: 15

Consent Required: Instructor

How was disease understood and healing sought in ancient Greek religion? What was the relationship of religious healing to the practice of medicine in Mediterranean antiquity? What light does this history shed on contemporary ideologies and practices of health care? Exploring three prominent sanctuaries of the physician-god Asklepios that were sites of pilgrimage and religious healing through the Roman period (Epidauros,

Kos, and Pergamon), and two smaller urban ones (Athens and Corinth), the seminar will consider a range of archaeological and literary evidence, as well as read secondary scholarship in classics, anthropology, and the study of religion. Enrollment limited to 15
Jointly Offered with: Harvard Divinity School as [HDS 3114](#)

POLITICS OF HEALTH

Freshman Seminar 271: Global Health: Comparative Analysis of Healthcare Delivery Systems

Sanjay Saini

Fall; M 12-2:45

Class Capacity: 12

Consent Required: Instructor

This interactive seminar will allow students to obtain greater understanding of challenges faced by US healthcare system through critical comparative analysis of healthcare systems of selected countries from the developed, emerging and developing world. Weekly sessions will comprise of student-led discussion that revolves around an important healthcare issue. Domain expert guest speakers will be included allowing students to network with thought leaders. Student will explore in-depth a topic of their choice and prepare a manuscript potentially for publication in a peer-reviewed journal.

Course Requirements: Course open to Freshman Students Only

GENED 1092: American Society and Public Policy

Theda Skocpol, Mary Waters

Fall; MW 9-10:15

In a period of contentious politics, Americans are debating fundamental issues about economic wellbeing and social justice. How can the nation expand opportunity and security for workers and families following years of rising socioeconomic inequalities and shifts in the relationship of families to work? How do we regulate immigration and citizenship and cope with surges in refugees and asylum seekers? How have ongoing partisan polarization and rising economic inequalities influenced U.S. responses to the current COVID-19 pandemic and the accompanying economic crisis? Controversies in these areas are bitter and persistent, and this course will introduce students to the ways the United States has dealt with each of set of challenges.

Government 94bc: How did we get here? America's racial history and its impact on social policy

Sarah James

Fall; Th 12:45-2:45

Class Capacity: 67

Consent Required: Instructor

Racial discord dominates many contemporary explanations for recent political and sociological developments in the United States. We will contextualize the recent racial discord by combining works from history, psychology, sociology, and political science to better understand the history of race in America. In the second half of the course, we will explore how race and racism has influenced the

development of five policy areas (immigration, healthcare, education, voting rights, and the carceral state and policing) to evaluate their role in rising inequality. We will also learn about best practices for conducting independent research in preparation for writing a senior thesis.

Class Notes: american_subfield Students will be admitted to Gov 94 seminars through a departmental organized lottery. The last day to submit your application is Monday, August 23rd by 6 pm. For more information, please visit the following link:<https://undergrad.gov.harvard.edu/gov-94-seminars>.

History 14x: Conquering Pandemics: Medicine and the State in the Effort to Control Disease

John Mulhall

Spring; T 3-5

From the ancient world to the present, two actors have played a central role in humanity's struggle to control disease: governing authorities and medical professionals. This course traces the interaction of medicine and the state, broadly conceived, through case studies of some of history's most catastrophic pandemics, including the Justinianic Plague, the Black Death, eighteenth-century smallpox, HIV/AIDS and COVID-19. Through this *longue durée* approach to the history of pandemics, we will be able to study a wide range of possible relationships between the state and the medical profession as both respond, or fail to respond, to disease crises. By the close of the course, students will be in a position to address the failures and successes of modern governments to current disease crises, informed by the hard-won lessons of the past.

History of Science 1441: Foreign Bodies: On Health and Migration

Eram Alam

Fall; W 12-2:45

Class Capacity: 15

Consent Required: Instructor

During the twentieth century, unprecedented human mobility has raised significant questions regarding migration and health. Whether coerced or voluntary, these migratory flows reverberate through individuals, communities, populations, environments, and the body politic in unexpected ways. This course will focus on the relationship between health and migration and ask the following questions: How are moving bodies named and managed? What are the political, economic, juridical, and medical implications of movement? How is risk defined and constructed in relation to migration? Readings will include case studies from around the world, supplemented with theoretical and literary texts.

History of Science 1460: From Colonial to Global Health

Joelle Abi-Rached

Fall; T 3-5

Class Capacity: 20

Consent Required: Instructor

“Global health” has become a new mantra of our time. Its deeper roots, though, lie in the history of colonialism. How does this fact matter? To find out, this course will focus on relations among colonialism, health care, and globalization in Africa, the Middle East, India, and Southeast Asia . Through a set of interdisciplinary and transnational readings, we will explore issues related to race, religion, modernity, subjectivity, and imperial ambitions, and we will do so through the lens of public health, epidemics, psychiatry, medical institutions, and disease history.

XREG: HSPH GHP 244: Health Sector Reform: A Worldwide Perspective

Thomas Bossert

Fall 2; TTh 2-3:30

Class Capacity: 67

This course is designed to give students an in depth understanding of health systems, and processes to reform them, using examples from middle and low-income countries. It presents two of the leading analytical frameworks for the analysis of health systems: the Harvard/World Bank “Flagship Approach” and the WHO “Building Blocks” approach. It first focuses on the broad objectives of health systems in these two approaches and presents some of the matrixes used to measure them. It also provides analytical tools for addressing ethical and political issues about health reform. It introduces the concepts of “control knobs” and “building blocks” for developing appropriate options to reform the systems in policy areas of financing (including tax and insurance based systems), payments to providers, organizational changes like decentralization and use of private sector, as well as human resources strategies and technological transitions. The course involves case studies, class discussion and lectures, and review of academic literature and international and governmental reports. The mid-term and final papers provide guidance in making strong analytical and logical arguments to apply the framework concepts to the health system of a country chosen by each student. Students outside of HSPH must request instructor permission to enroll in this course

Note: This course provides 2.5 credits. In order to receive credit equivalent to a course in FAS, a student must take two 2.5-credit HSPH courses.

XREG: HSPH GHP 269: The Political Economy of Global Health

Jesse Bump

Spring 2; MW 9:45-11:15

Class Capacity: 67

This course presents theoretical perspectives, empirical cases and research issues in policy analysis and political economy in global health. The focus is on analytical and methodological issues. The main purpose is to examine the political economy constraints on national and global health initiatives, the role of international agencies, the impact of non-governmental organizations, and the role of the state.

Course Activities: All students will be expected to participate actively in class discussions and submit three assignments. Doctoral students in GHP must write a final paper; master's students and non-GHP doctoral students have the option to either write a final paper or complete a take-home final exam. Exams and papers will constitute 80% of the grade and class participation 20%.

Prerequisites: There are no prerequisites for this course. Students outside of HSPH must request instructor permission to enroll in this course

Note: This course provides 2.5 credits. In order to receive credit equivalent to a course in FAS, a student must take two 2.5-credit HSPH courses.

SCIENCE OF HEALTH AND DISEASE

Freshman Seminar 25x: How the Brain Becomes the Mind: A Bottoms-up and Top-Down Perspective

Thomas Byrne

Fall; W 6-8

Class Capacity 12

Consent Required: Instructor

Is the human mind an “emergent” property of the brain? How might that occur? We study how structure and properties of the brain and mind are shaped by biology, chemistry, experience and disease. Experiences during “critical periods” modify brain anatomy/function resulting in learning a foreign language before or after puberty is revealed by a native or foreign accent. Mirror neurons play a role in motor skills, emotion, and empathy: Examples include “contagious” happiness or sadness and theory of mind; their dysfunction may cause autism. Beyond these “bottoms up” explanations, we will also consider a “top down” approach, in which the intention or purpose of a behavior or idea can “pull” our behavior or state of mind, what Aristotle termed “Final Cause.” The human brain/mind is a pattern-seeking organ that uses logical patterns to predict the future. From infancy we make sense of the world by using the logic which is embedded as “core knowledge”. We then use these patterns to look into the future, to anticipate where a given pattern will lead; we may choose to be “pulled” to that goal; thus, the goal often determines behavior and worldview. We read Victor Frankl's *Man's Search for Meaning* which explores human thought, behavior and purpose. This seminar straddles the realms of science, which asks “how?”, and the humanities, which traditionally asks “why?” and strives to reconcile these two approaches to understanding the world and our place in it.

Recommended Prep: The course is intended for those who have scored -5- on AP Biology, Chemistry, Physics or Calculus

Course Requirements: Course open to Freshman Students Only

Freshman Seminar 26w: The Biology and Science of Cancer and Its Treatments: From Empiric to Scientific to Humanistic

George Demetri

Spring; TBA

Class Capacity 12

Consent Required: Instructor

“Cancer” represents hundreds of different diseases with a wide variety of causative mechanisms, as well as enormous social impact. This seminar aims to provide an introduction to the biology of cancer and what makes a normal cell

become a cancerous one, delving into acquired and inherited genetic abnormalities and effects of environmental factors, such as nutrition, radiation, and tobacco. Current approaches to cancer will be discussed from prevention and early detection to treatment and survivorship. Treatment modalities continue to evolve—no longer just surgery, chemotherapy and radiotherapy, but development of targeted therapies such as monoclonal antibodies, signal transduction inhibitors, vaccines, and angiogenesis inhibitors, which are rationally aimed at biological mechanisms uniquely important to the cancer cells themselves with the goal of reducing side effects of therapy and improving outcomes. Although cancer incidence continues to increase, mortality is decreasing, resulting in many more cancer survivors and a need to care for the secondary effects of the treatment and the societal impact of this disease. We will discuss the field of Integrative Oncology, an evolving discipline that treats the patient as a whole and combines the best of eastern and western medicine. As successful cancer management becomes more targeted with the newer therapies, there needs to be an integrative approach which focuses on clinical outcomes for patients, personalized approaches to individual cancers, yet which takes into account the financial impact of new therapies at a global level and allows development of wise public policy decisions.

Course Requirements: Course open to Freshman Students Only

Freshman Seminar 51m: Skin, Our Largest, Hottest, and Coolest Organ: From Cancer to Cosmetics

David Fisher

Fall; M 3-5:45

Class Capacity 12

Consent Required: Instructor

Skin provides a protective barrier that is vital to survival of all multicellular organisms. Its physical properties have been exploited for centuries, from clothing to footballs, and yet skin is a vibrant and dynamic organ that responds to environmental signals in myriad ways. Skin protects humans from toxic exposures, but can also be an intrinsic source of dangerous diseases. While its defects only rarely kill humans, its imperfections can cause misery and discomfort, ranging from subtle annoyances to depression and loss of self-esteem. It is a source of immense pleasure or excruciating pain. This seminar will provide a series of exposures at an introductory level, to distinct topics in skin biology. They will exemplify the diverse and vibrant nature of cutaneous networks and signals, through the lens of commonly recognized topics such as tanning, hair, sweat, cancer, cosmetics, cancer, and infections.

Recommended Prep: None. Prior AP-Biology may be helpful but not required.

Course Requirements: Course open to Freshman Students Only.

GENED 1027: Human Evolution and Human Health

Daniel Lieberman

Spring; TTh 1:30-2:45

How and why did humans evolve to be the way we are, and what are the implications of our evolved anatomy and physiology for human health in a post-industrial world? Why do we get sick, and how can we use principles of evolution to improve health and wellbeing? To address these questions, this course reviews the major transitions that occurred in human evolution, from the divergence of the ape and human lineages to the origins of modern humans. Also considered are the many effects of recent cultural and technological shifts such as agriculture and industrialization on human health.

GENED 1038: Sleep

Charles Czeisler, Frank Scheer

Fall; T 3-5

What is sleep? Why do we sleep? Why don't we sleep? How much sleep do you need? What are circadian rhythms? How do technology and culture impact sleep? This course will explore the role of sleep and circadian timing in maintaining health, improving performance and enhancing safety. We will evaluate the causes and consequences of the epidemic of sleep disorders and deficiency in our society, with particular attention to impacts on brain (learning and memory, mood and cognition) and body (appetite and metabolism, hormones and heart) functions. Personal and public policy approaches to issues such as drowsy students, drowsy drivers and drowsy doctors will be addressed.

GENED 1084: The First Nine Months

David Haig

Spring; TTh 9-10:15

What makes a human? A baby develops from a single cell during the nine months of gestation, but the process that begins so simply has complications that stretch beyond the womb into questions of human identity and individuality. This course will explore the process of embryonic and fetal development, highlighting complicated questions such as the medical dilemma of maternal-fetal conflict, which occurs when doctors must evaluate the competing health needs of both fetus and mother. You will study disorders of pregnancy such as gestational diabetes and preeclampsia, as well as types of nonstandard fetal development, like monozygotic twins or microchimerism, that result in human diversity. The course will also consider the kinds of families made possible by ovum donation, sperm donation, surrogate pregnancies, and the like, as well

as the questions of bioethics raised by such assistive reproductive technologies.

Chemistry 101: Chemical Biology Towards Precision Medicine

Stuart Schreiber

Fall; TTh 10:30-11:45

Class Capacity: 125

Advances in chemistry and biology suggest new ways to discover *precision medicines* that address the underlying cause of disease – in a precise and personalized way – and thus to accelerate the understanding and treatment of human disease and to deliver the right medicine to the right patient at the right time and in the right location.

Chemical Biology Towards Precision Medicine teaches students principles of chemical biology and human biology relevant to the discovery of safe and effective therapeutics, especially small-molecule therapeutics. The course will explore patient-based 'experiments of nature'* that illuminate disease. After the first half of the course on "Foundations" – foundational capabilities relevant to drug discovery from human and chemical biology – and a second half of the class will focus on "Applications" – different diseases for which human biology-based approaches offer promise. (These indications include: infectious disease (malaria; TB; HIV/AIDS), psychiatric disease (schizophrenia and bipolar disorder), neurodegenerative disease (Alzheimer's Disease; traumatic brain injury; prion disease; Parkinson's Disease), diabetes (Type-1 and Type-2) and metabolic disorders, cancer (targeted therapy; immunotherapy; resistance), cardiovascular disease, inflammatory bowel disease, regenerative medicine, and aging.)

Lecture materials will be presented asynchronously via recorded videos, while interactive, in-class learning at the regular class time will start with a high-level overview of the key concepts of the reading assignment(s) and class. We'll invite some experts on Chem 101's topics, including authors of the reading assignments, to join us during class time. There are two main purposes of in-class learning: 1) to assess your preparedness for the class and 2) to discuss interactively the topics, the evidence in support of the conclusions, and the implications of the studies for future novel and innovative research.

A primary goal of the class overall is to teach you how to identify opportunities for future research and to write, with guidance from the course Teach Fellows, two NIH-style research proposals (mid-term and final) working together in teams of up to 5 students/proposal. There will be no traditional exams in Chem 101 – instead, you will be evaluated on the basis of: 1) your class preparedness and participation; and 2) your participation in the team-based proposal-writing exercise.

Human Evolutionary Biology 1380: The Behavioral Biology of Women

Lara Durgavich

Fall; TTh; 9-10:15

An exploration of female behavior focusing on evolutionary, physiological, and biosocial aspects of women's lives from puberty, through reproductive processes such as pregnancy, birth, lactation, to menopause and aging. Also explores female life history strategies in different cultural settings. Topics include cognitive and behavioral differences between men and women; violence against women; and women's reproductive health choices.

Examples are drawn from traditional and modern human societies and data from nonhuman primates are considered.

Class Notes: This course will meet in MCZ (Museum of Comparative Zoology) Room 529.

Human Evolutionary Biology 1410: Gut Microbiome and Human Health

Rachel Carmody

Fall; W 3-5

Consent Required: Instructor

Microorganisms residing in the human gastrointestinal tract are as numerous as our own cells and together encode at least 150 times as many unique genes. In this research seminar, we explore gut microbial contributions to human physiology in states of health and disease. We consider how the human gut is colonized, the factors shaping the structure and function of the gut microbiome, and the pivotal roles of the gut microbiome in digestion, energy regulation, immunity, development, drug metabolism, and behavior. We evaluate fast-growing evidence for the gut microbial modulation of metabolic syndrome, cardiovascular disease, cancer, and neurodevelopmental and neurodegenerative disorders, and discuss prospective microbiome-targeted approaches for the prevention and treatment of human disease. The weekly three-hour lab will introduce students to experimental, bench and computational techniques used to investigate the gut microbiome, enabling students to collaborate on a novel research project that dovetails with topics discussed in seminar.

Course Notes: This course fulfills the research seminar requirement for Human Evolutionary Biology. Preference will be given to Human Evolutionary Biology concentrators fulfilling a research seminar requirement and Human Evolutionary Biology graduate students.

Recommended Prep: Life Sciences 2 or permission of instructor.

Life Sciences 2: Evolutionary Human Physiology and Anatomy

Daniel Lieberman, George Lauder, Andrew Biewener,

Joanne Clark Matott

Fall; MWF 12-1:15

Class Capacity: 192

Why is the human body the way that it is? This course explores human anatomy and physiology from an integrated framework, combining functional, comparative, and evolutionary perspectives on how organisms work. Major topics, which follow a life-course framework, include embryogenesis, metabolism and energetics, growth and development, movement and locomotion, food and digestion, stress and disease, and reproduction. Also considered is the relevance of human biology to contemporary issues in human health and biology.

Course Notes: This course includes a weekly 3-hour lab.

This course may not be taken Pass/Fail.

Recommended Prep: Prerequisite LIFESCI 1A (LS1a)

Mind, Brain, and Behavior 980m: Functional Neuroimaging of Psychiatric Disorders: Insights into the Human Brain-Mind

David Silbersweig

Spring; Th 3-5

Class Capacity: 15

Consent Required: Instructor

Functional brain imaging has revolutionized the study of systems-level behavioral neuroscience and psychiatric disorders, through the ability to localize and characterize distributed brain activity directly associated with perception, cognition, emotion and behavior in disorders where there are not gross brain lesions. This seminar will introduce students to translational neuroimaging methods at the interface of neuroscience, psychology and medicine. It will cover recent and ongoing advances in our understanding of fronto-limbic-subcortical brain circuitry across the range of psychiatric disorders (e.g. mood disorders, anxiety disorders, psychotic disorders, personality disorders, addictions). It will discuss new, emerging biological (as opposed to descriptive) taxonomies and conceptualizations of mental illness and its treatment. It will explore the implications of such knowledge for issues such as consciousness, meaning, free will, emotion, resilience, and religiosity. It will incorporate clinical observations, scientific data and readings, and examine future directions in brain-mind medicine.

Course Notes: Course inquires to Dr. Silbersweig at dsilbersweig@partners.org. Preference to juniors in MBB tracks or MBB secondary field. Admission to this course is via lottery; see <https://mbb.harvard.edu/seminars> for lottery details.

Molecular and Cellular Biology 64: Cell Biology in the World

Jessica Liu; Sam Kunes

Spring; MW 3-4:15

This course teaches fundamental concepts in cell biology in the context of several individual life histories drawn from different parts of the world. Each life case focuses on key aspects of human development, growth, aging and disease while providing a nuanced view of the interplay between the life sciences, geography and culture. For example, the Human Immunodeficiency Virus and AIDS in South Asia is used to explore mucosal immunity and the basis for estimating relative infection risk, while a comparative discussion of aging in the United States and Japan is used to explore cellular metabolism and its relationship to protein damage and turnover. Each case delves into the cell biology of major biological events across the life history of a human being from different geographical and cultural backgrounds.

Molecular and Cellular Biology 169: Molecular and Cellular Immunology

Shiv Pillai

Fall; TTh 10:30-11:45

The immune system is the frontier at which molecular biology, cell biology, and genetics intersect with the pathogenesis of disease. This year the entire course will be taught through the lens of COVID19, examining the underlying scientific bases of pathogenesis, protection, treatment and prevention. The course examines in depth the cellular and molecular mechanisms involved in the development and function of the immune system and also analyzes the immunological basis of human diseases in general. Apart from COVID19, we will discuss AIDS, autoimmunity, allergic disorders, primary immunodeficiency syndromes, transplantation, and cancer

Recommended Prep: Genetics and cell biology strongly recommended.

Course Requirements: Prerequisite: LPS A OR LS 1a.

Organismic and Evolutionary Biology 50: Genetics and Genomics

Daniel Hart, Robin Hopkins

Fall; TTh 10:30-11:45

Consent Required: Instructor

Fundamental concepts in genetics and genomics forming a critical foundation for biology approached from two perspectives: (1) as a body of knowledge pertaining to genetic transmission, function, mutation, and evolution in eukaryotes and prokaryotes; and (2) as an experimental approach providing a toolkit for the study of biological processes such as development and behavior. Topics include structure, function, transmission, linkage, mutation, and

manipulation of genes; genetic approaches in experimental studies of biological processes; and analysis of genomes in individuals and populations. Related ethical issues also discussed include genetically modified organisms, gene therapy, genetic testing, personalized medicine, and genetic privacy.

Psychology 18: Abnormal Psychology

Rebecca Shingleton

Spring; TBA

Introduction to the study of psychological dysfunction. Focuses on abnormal behavior as it relates to the definition, etiology, and treatment of major symptom domains. This course will emphasize critical evaluation of the causes and mechanisms of mental illness, with special attention paid to recent neuroscientific and genetic research on the neurobiology of psychopathology.

Course Notes: This course counts toward foundational requirements for Psychology and should be taken before courses at the 1000 level or higher.

Recommended Prep: The Psychology Department requires completion of Science of Living Systems 20 or Psychology 1 or the equivalent of introductory psychology (e.g. Psych AP=5 or IB=7 or Psyc S-1) before enrolling in this course; or permission of instructor.

Course Requirements: SLS20 or PSY1 or Psychology AP=5 or Psychology IB=7 or Psyc S-1.

Psychology 1005: Health: A Positive Psychology Perspective

Ellen Langer

Fall; TTh 10:30-11:45

Why does it seem that some people are so resilient and content? This course looks at psychological and physical health from the perspective of Positive Psychology. The major focus will be on mindfulness theory and its relationship to stress/coping; illness/wellness; decision-making; and placebos. The medical model, the biosocial model, and a unified mind-body model will be compared to examine their role in becoming mindful and thus healthier, happier and less stressed.

Class Notes: There will be a course preview event for this course on August 23rd at 10:00am. A Zoom link will be available on the canvas course site.

Recommended Prep: The Psychology Department requires completion of Science of Living Systems 20 or Psychology 1 or the equivalent of introductory psychology (e.g. Psych AP=5 or IB =7 or Psyc S-1) and at least one foundational course from PSY 14, PSY 15, PSY 16, or PSY 18 before enrolling in this course; or permission of instructor.

Course Requirements: SLS20 or PSY1 or Psychology AP=5 or Psychology IB=7 or Psyc S-1 AND PSY14 or PSY15 or PSY16 or PSY18.

**Psychology 1201: Your Brain on Drugs:
Psychopharmacology**

Scott Lukas

Fall; TTh 1:30-2:45

An introduction to how drugs affect mood, sensation, consciousness, and other psychological and behavioral functions in both healthy and disease states. Introduces concepts in neuroscience and pharmacology to understand how drugs are used to treat drug abuse, psychiatric disorders and why individuals use recreational drugs. Covers all CNS drugs, including antidepressants, antipsychotics, alcohol, and both licit and illicit drugs of abuse. Debates controversial topics such as research with psychiatric populations, diagnosing ADHD, teenage suicide, marijuana legalization, and needle exchange programs.

Recommended Prep: The Psychology Department requires completion of Science of Living Systems 20 or Psychology 1 or the equivalent of introductory psychology (e.g. Psych AP=5 or IB =7 or Psyc S-1) and at least one foundational course from PSY 14, PSY 18, MCB/NEURO 80, MCB 81 or Psyc S-1240 before enrolling in this course; or permission of instructor.

Course Requirements: SLS20 or PSY1 or Psychology AP=5 or Psychology IB=7 or Psyc S-1 AND PSY14 or PSY18 or MCB80 or NEURO80 or MCB81 or Psyc S-1240.

Psychology 1816: Broken Brains: Mechanisms and Markers of Mental Illness

Mayron Pereira Piccolo Ribeiro

Fall; M 12:45-2:45

Class Capacity: 16

Consent Required: Instructor

This course will integrate clinical psychology and cognitive neuroscience to explore the biological underpinnings of mental illness. We will adopt a systems-level approach, examining the relationship between function and dysfunction of specific brain circuits and networks and mental health disorders. For example, addiction, disordered eating, depression, and psychosis have all been linked to the brain's reward system. What does this common neural foundation indicate and how has this discovery advanced treatment options? Throughout the course, we will draw on findings from traditional and cutting-edge methodologies that have produced critical insights and key breakthroughs. We will also discuss how large-scale neuroimaging studies, like the Human Connectome Project, can be used to trace disordered behaviors such as criminality, depression, and hallucinations to specific brain networks. As we explore these topics, we will discuss how these research findings inform mental health treatment and potentially complement discussions around important societal issues such as racial bias and criminal responsibility.

Recommended Prep: The Psychology Department requires completion of Science of Living Systems 20 or Psychology 1 or the equivalent of introductory psychology (e.g. Psych AP=5 or IB =7 or Psyc S-1) and one of PSY 18 or PSY 1861 before enrolling in this course; or permission of instructor.

Course Requirements: SLS20 or PSY1 or Psychology AP=5 or Psychology IB=7 or Psyc S-1 AND PSY18 or PSY1861

Psychology 1861: Developmental Psychopathology

John Weisz

Fall; TTh 12-1:25

We all have richly complex personalities that blend strengths with anomalies. This course examines the nature and origins of psychological anomalies, problems, and disorders that emerge during childhood, adolescence, and youth. Topics include anxiety, OCD, depression, conduct disorders, ADHD, eating disorders, autism, and responses to maltreatment and trauma. Coverage of each topic includes characteristics, causes and correlates, and effective treatments. Personal application of the concepts and findings is encouraged and supported.

Recommended Prep: The Psychology Department requires completion of Science of Living Systems 20 or Psychology 1 or the equivalent of introductory psychology (e.g. Psych P=5 or IB =7 or Psyc S-1), or permission of instructor, before enrolling in this course.

Course Requirements: SLS20 or PSY1 or Psychology AP=5 or Psychology IB=7 or Psyc S-1REQ: PSY.

Stem Cell and Regenerative Biology 167: Stem Cell Therapeutics: Exploring the Science and the Patient Experience

Leonard Zon

Spring; W 9-11:30

Consent Required: Instructor

Stem cells are the basis for tissue maintenance and repair, thus, are essential elements of normal organ and tissue physiology. Stem cells are also targets for disease processes and through transplantation are important therapeutic agents. This course will allow advanced undergraduates to explore how stem cells and tissue regeneration impact human disease pathogenesis and how stem cells might be exploited to advance new therapies for disease.

Recommended Prep: Life and Physical Sciences A or Life Sciences 1a; Life Sciences 1b; SCRB 10.

Stem Cell and Regenerative Biology 190: Understanding Aging: Degeneration, Regeneration, and the Scientific Search for the Fountain of Youth

Amy Wagers

Fall; MW 12-1:15

This lecture and discussion course will explore the fundamental molecular and cellular mechanisms that govern organismal aging and contemporary strategies to delay or reverse this process.

Recommended Prep: Life and Physical Sciences A or Life Sciences 1a; Life Sciences 1b; SCRB 10.

Stem Cell and Regenerative Biology 195: The Translational Science of Stem Cells

Lee Rubin

Fall; TTh 12-1:15

Consent Required: Instructor

Stem cell biology has gone mainstream, having become essential for both understanding and treating human disease. In this seminar/lecture course, students will learn about using functional human cells (such as pancreatic beta cells or dopaminergic neurons) to treat disease. They will also learn about using these cells to model diseases, such as ALS and Parkinson's disease, with the goal of identifying more effective, possibly patient-specific, therapeutics. Finally, students will learn about agents, including small molecules, whose therapeutic potential can be attributed to the activation or inhibition of adult, tissue-specific, stem cells that continue to reside in key adult tissues. They will also be exposed to exciting new work that demonstrates the potential for creating new cells from old by using reprogramming methods (not unlike those used to make induced pluripotent stem cells) to switch cell identities. A typical type of question that we will debate is: When should Parkinson's disease patients be treated with a drug to slow death of residual neurons, with new dopaminergic neurons made from pluripotent cells (cell transplantation) or with a viral vector that produces new neurons from existing glial cells in the brain? Given the seismic change that has occurred in the pharmaceutical industry in the past few years, we will feature a course module on human disease genetics and rare diseases. In particular, we will discuss the development of therapies for Spinal Muscular Atrophy, a life-threatening monogenic childhood disease. How were three different therapies developed by three biotechnology/pharmaceutical companies? Why did this make financial sense? How will this change the decision stream in industry?

Course lecturers include industry and academic leaders who will explore these topics and describe the impact of rare disease research on current drug discovery efforts. An accompanying module will introduce the ways in which stem cells can be applied to the study of rare Mendelian-

type diseases, as well as to more genetically complex disorders. This course will highlight the theoretical, as well as the practical, aspects of drug development. How are therapies progressed from conception to patient (bench to bedside)? Why do stem cell-based approaches potentially occupy a special "niche" in this type of work? We will learn about how academic investigators commercialize research and will hear the perspective of a prominent venture capitalist. We anticipate that students with different backgrounds (biology, engineering, business) and at different levels (undergraduate, graduate) will benefit from taking the course and will help enrich the discussions by providing different perspectives on the topics that we'll cover. We expect that the course will be hybrid. The students, as well as most of the instructors, whether Harvard-based or not, should be present in the classroom. However, some of the speakers are located overseas or on the west coast and will lecture and interact with the students by Zoom.

Course Notes: Permission of the instructor required to enroll. Ability to work in a less structured environment will be essential.

Recommended Prep: Life Sciences 1a or Life and Physical Sciences A, Life Sciences 1b, and preferably SCRB 10.

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