

The Blue Book

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

2020–2021

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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/summer-opportunities>.

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 11, 2020. 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 2020-21 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 2020-2021:* 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; TBA

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; MW 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

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

Fall; TTh 12-1:15

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 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 the 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; TBA

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; MW 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?

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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.

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

Stan Finkelstein

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: First Meeting September 2.

Economics 980w: Policy Options in Health Economics

Ariel Pakes

Spring; TBA

Consent Required: Instructor

The seminar will focus on policy issues in health economics. We will read papers on an assortment of policy options and formulate frameworks for analyzing their likely impacts on outcomes of interest. Examples include the analysis of mergers in hospital and insurance markets, the choice of capitation vs fee for service contracts and its impact on cost and quality of care, policy options for health insurance, and the re-structuring of health service providers. Where possible we will use data and do the analysis quantitatively. Some knowledge of microeconomic and statistical tools, particularly those related to industrial organization, will be helpful (a few of the needed techniques will be taught during the course). This is a Junior Tutorial.

Course Notes: This course requires special action-application or lottery- to enroll. Visit

economics.harvard.edu/page/junior-seminar-0 and the course canvas site for more information.

Recommended Prep: Ec 1010a and 1010b (or 1011a and 1011b), one of stats 100, 104 or 110, and Ec 1123 or 1126 (or concurrent enrollment in 1123 or 1126).

Economics 1460: Economics of Health Care Policy

Joseph P. Newhouse

Fall; MW 9-10:15

Policy issues related to the following: the demand for medical care services, especially as a function of insurance; the demand for insurance and issues of selection; reimbursement policies of Medicare and other payers

toward health plans, hospitals, and physicians; effects of health maintenance organizations and managed care; and malpractice and tort reform. Focus on federal policy, although state and local perspectives will receive some attention.

Course Notes: Offered jointly with the Kennedy School as SUP-572 and Harvard Chan School as HPM 227.

Recommended Prep: Economics 1010a or 1011a. A statistics course is highly desirable.

ENGINEERING SCIENCES AND STATISTICS

Applied Mathematics 101: Statistical Inference for Scientists and Engineers

Robert D. Howe, Jeffrey Paten

Fall; MW 10:30-11:45 (section 1); MW 6-7:15 (section 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 12-1:15

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.

Biomedical Engineering 130: Neural Control of Movement

Maurice Smith

Spring; TBA

Approaches from robotics, control theory, and neuroscience for understanding biological motor systems. Analytical and computational modeling of muscles, reflex arcs, and neural systems that contribute to motor control in the brain. Focus on understanding how the central nervous system plans and controls voluntary movement of the eyes and limbs.

Learning and memory; effects of variability and noise on optimal motor planning and control in biological systems.

Recommended Prep: Mathematics 21b or Applied Mathematics 21b or equivalent, probability and statistics, Applied Physics 50a, Physical Sciences 12a, or equivalent.

Economics 1123: Introduction to Econometrics

Davide Pettenuzzo (Fall), Gregory Bruich (Spring)

Fall; MW 1:30-2:45

Spring; TBA

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. Also, Economics 1123 may not be taken for credit if taken after Economics 1126, but credit will be given for both courses if Economics 1123 is taken first.

Recommended Prep: Statistics 100 and 104.

Economics 1126: Quantitative Methods in Economics

Ellie Tamer

Fall; MW 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: Economics 1123 may not be taken for credit if taken after Economics 1126, but credit will be given for both courses if Economics 1123 is taken first. 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

Elsie Sunderland, Steven Wofsy
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).

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

Engineering Sciences 53: Quantitative Physiology as a Basis for Bioengineering

Daniel Needleman, Lindsey Moyer
Fall; MWF 12-1:15

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.

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

Peter Huybers
Fall; MW 3-4:15

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.

Government 50: Data

David Kane
Fall; TTh 7:30-8:45 am (section 1); TTh 12-1:15 (section 2)
Spring; TTh 12-1:15

This course, an introduction to data science, will teach you how to think with data, how to gather information from a variety of sources, how to import that information into a project, how to tidy and transform the variables and observations, how to visualize, how to model relationships, how to assess uncertainty, and how to communicate your findings. Each student will complete a final project, the first entry in their professional portfolio. Our main focus is data associated with political science, but we will also use examples from education, public health, sports, finance, climate and other. (Previous course number: Gov 1005).
Class Notes: Gov 50 corresponds to old course number Gov 1005 (Data). This Course will be accessible in most time zones.

Course Format (Fall): Synchronous traditional lecture. Students can choose to enroll in either Tuesday/Thursday 7:30-8:45am or Tuesday/Thursday 12-1:15pm.

Molecular and Cellular Biology 111: Mathematics in Biology

Elena Rivas

Fall; MWF 10:30-11:45

This course 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. About half of the course covers topics on information theory, Bayesian inference, statistics, and probabilistic modeling. The second half 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. 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.

Recommended Prep: Mathematics 19 or higher.

Psychology 1900: Introduction to Statistics for the Behavioral Sciences

Patrick Mair (Fall), Thomas Rusch (Spring)

Fall; MW 12-1:15

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

Sociology 156: Quantitative Methods in Sociology

Alexandra Killewald

Spring; TBA

Introduces quantitative analysis in social research, including principles of research design and the use of empirical evidence, particularly from social surveys. Descriptive and inferential statistics, contingency table analysis, and regression analysis. Emphasis on analysis of data and presentation of results in research reports.

Course Notes: Required of and limited to Sociology concentrators, ordinarily sophomores.

Statistics 102: Introduction to Statistics for Life Sciences

Kevin A. Rader

Spring; TBA

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

Katy McKeough

Fall; TTh 1:30-2:45

Spring; TBA

A rigorous introduction to statistics for students intending to study economics. Examples drawn from finance, decision analysis and economic decision-making. In addition to descriptive statistics, probability, inference and regression modeling, also covers portfolio optimization, decision analysis, and time series analysis. 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.

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; TBA

Class Capacity: 50

Consent Required: Instructor

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; TBA

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 1150: Medicine and Conflict: The History and Ethics of Healing in Political Turmoil

Soha Bayoumi

Fall; TTh 10:30-11:45

"War is the only proper school for surgeons," the Ancient Greek physician, Hippocrates, is quoted to have said. This saying has been used to show how medicine and war have been thought for millennia to shape each. Medicine has played a major role in situations of political conflict, ever since human societies engaged in war and started elaborating "just war doctrines," that determine how belligerent parties should conduct war, as an attempt to "civilize" war and mitigate its scourges.

Through an investigation of case studies from the modern and contemporary world, this course will examine the role played by medicine in situations of political conflict, as well as the role played by war and humanitarian crises in the history of medical thought and practice. It will explore how medical knowledge and expertise have been deployed in situations of political violence or tumult and will ponder some of the ethical dilemmas faced by medical professionals in those contexts. Covering cases ranging from surgery in the American Civil War to the provision of medical care in the Syrian refugee crisis, some of the themes discussed will include biomedical ethics in armed conflict, torture, trauma, contagion, and medical innovation in conflict contexts.

GENED 1171: Justice: Ethics in an Age of Pandemic and Racial Reckoning

Michael Sandel

Fall; MW 10:30-11:45

Class Capacity: 750

Consent Required: Instructor

What is a just society? What do we owe one another as citizens? What is a good life? These questions, long debated by philosophers, arise with special urgency at a time of pandemic and racial reckoning. The course explores these questions by considering how philosophers have tried to answer them, and by debating contemporary issues—in politics and everyday life—that prompt us to ask: What's the right thing to do? Topics include controversies about equality and inequality, individual rights and the common good, the role of government and markets, and competing conceptions of identity and community. Cases include ethical questions arising from the pandemic and recent debates about racial justice.

Class Notes: Justice is a University Course, which means that students from all Harvard schools are able to enroll. Enrollment is limited to 750. Students who submit a petition

to enroll by August 21 will have priority. Class meetings integrate video materials with live discussion—sometimes with the class as a whole, sometimes in small breakout sessions. Due to the participatory nature of the course, students are expected to attend all class meetings. Those unable to attend in the morning are welcome to attend the evening version of the course (M and W, 7:30-8:45pm). This is not a recorded version of the morning class, but a live, participatory session covering the same material and led by Dr. Sergio Imparato. All students will also have a weekly, small group discussion section. This course has an enrollment cap, so to be considered, you must request permission to enroll and rank your choices through my.harvard by 11:59 p.m. Friday, August 21. The Gen Ed lottery will run Monday, August 24, with approvals and denials sent out 11:59 p.m. that day. Visit the [Fall 2020 Gen Ed web page](#) for more information and step-by-step instructions.

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; TBA

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 2020 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.

Course Format: Synchronous Seminar.

Schedule: This course is open to students in all time zones.

After registration day, the course will be scheduled based on the enrolled students' time zones and course schedules.

History of Science 253: 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, Cristina Lacomba

Fall; TTh 12-1:15

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

TBA

Spring; TBA

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. Aside from funding medical research on the disease, nonprofit organizations have been addressing its social impacts as well. This course provides students with a unique opportunity to experience first-hand how philanthropists and nonprofit organizations are helping address the global effects of this global pandemic. In the first part of the course, we will examine the workings of philanthropy and of nonprofit organizations, using different sociological perspectives and a series of case studies. In the second part, students will work in groups to identify and evaluate nonprofits working to address the various social effects of COVID-19, and to educate the class on the social effects of COVID-19 that nonprofits now address. At the end of the course, student groups will decide how to disburse a grant provided by the Philanthropy Lab to nonprofits working in areas affected by COVID-19, and to experience first-hand the dilemmas donors face as they evaluate nonprofits for donation.

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: Issues in Health and Human Rights

Stephen P. Marks

Fall 2: TTh 3:45-5:15

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? 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?

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; TBA

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; M 10-11:15 Or F 1:30-2:45

Class Capacity: 24

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.

Class Notes: Students are expected to attend one class lecture per week, on Mondays from 10-11:15 am or Fridays 1:30-2:45 pm.

HEALTH, CULTURE, AND SOCIETY

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

Richard Lee

Fall; MW 3-4:15

Class Capacity: 50

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.

Class Notes: This course has an enrollment cap, so to be considered, you must request permission to enroll and rank your choices through my.harvard by 11:59 p.m. Friday, August 21. The Gen Ed lottery will run Monday, August 24, with approvals and denials sent out 11:59 p.m. that day. Visit the [Fall 2020 Gen Ed web page](#) for more information and step-by-step instructions.

GENED 1078: Disease, Illness, and Health through Literature

Karen Thornber

Fall; TBA

Inevitably, at some point in our lives, most of us will develop a health condition that requires medical treatment and care. We also, regardless of our career, are likely to be called on to provide care for those whose health conditions make it impossible for them to care for themselves. What

does it mean to be an effective partner in care, both in our personal lives and, for those in the health professions, in our professional lives? How can we best prepare ourselves to be effective care partners, whether we are the givers of care, the receivers of care, or often both? What should our short-term and long-term goals be and how can we best implement these goals? As healthcare costs soar and considerable suffering from disease and illness continues despite regular advances in medical technology, what should we advocate for in our communities, our societies, our nations, and beyond to ease the burden of disease and illness on caregivers and care recipients alike?

This course provides the ideal space for you to contemplate these and similar fundamental questions, which all of us increasingly must face. Class discussions, readings, and written assignments will provide the tools for you to become more effective advocates for compassionate care, both now and in the future. Engaging with a diverse range of memoirs, creative non-fiction, life writing, and novels from five continents by physicians, patients (including physician-patients), and concerned citizens alike, the course challenges many fundamental preconceptions regarding disease, illness, health, and care. This course helps us interrogate what it means to promote healing and wellbeing in our personal and professional lives particularly in the current COVID era.

Class Notes: Every week, students in Gen Ed 1078 are expected to participate in 2 hours and 15 minutes of synchronous (live) class via Zoom. This will consist of participation in 1) either a 75-minute synchronous lecture or a 75-minute live peer learning session as well as 2) a 1-hour live section with a TF. This course's live lectures are scheduled for 3-4:15 pm Eastern time Mondays and Wednesdays, BUT students are only required to attend one live lecture every other week; the attendance schedule will be determined the first week of class. Moreover, the MW 3-4:15 time is flexible, and if student time zones require it, the professor will hold every other Wednesday's live lecture at a different time. Students must attend the live lectures to which they're assigned, but they're also welcome to attend as many additional live lectures as they'd like. All lectures will be recorded, and students are responsible for watching the recordings of lectures they do not attend synchronously. Weeks where students do not attend a live lecture, they are required to attend a synchronous peer-learning session. Every week, all students will also attend a required synchronous section with their TF; section times will be determined based on student preferences.

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

Gabriela Soto Laveaga
Spring; TBA

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

Anne Becker, Paul Farmer, Salmaan Keshavjee, Arthur Kleinman,
Fall; TTh 12-1:15

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 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 the 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 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.

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

Lisa Wong
Fall; Th 3-5
Class Capacity: 18
Consent Required: Instructor

Music shapes the course of human history at both a micro and macro scale; it can make an individual weep and rally crowds of thousands to cheer. 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 50 years have scientists been able to move past intuition to reveal its impact on the brain. Through this course, we will examine the exciting progress of the fields of music and medicine, through a variety of lenses. Who are the key investigators and practitioners in today's emerging music / brain landscape? What are the latest discoveries

about how music influences the brain? How does the direct application of music function — how do we hear, how do we listen, and what happens when this process goes wrong? What has music's role been through human history, and where does that bring us today? This course invites the student to deepen his/her relationship with music exploring different aspects of the art form through several perspectives, including neuroscientist, educator, musician, therapist, patient, and healthcare provider. 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 educational and neuroscientific knowledge to therapeutic uses of music. Students will be invited to bring their own experiences to the seminar, and to pursue a final independent project, conducting a combination of scientific, historical, education, or psychology research. In the final weeks, they will present their findings to the group in oral, written or musical format. Given the transdisciplinary nature of the work, students will be challenged to read literature from a variety of genres, from lay literature to educational monographs to scientific papers. This will lead to discussion of one of the key questions in interdisciplinary study between the sciences and the arts: how to research and document outcomes. How do we agree on common definitions of research in disparate fields? What constitutes research to a musician? A music therapist? A neuroscientist? A physician? What is proof of success? What can/should be measured?

Course Notes: Preference to juniors in MBB tracks or MBB secondary field.

Class Notes: To be admitted to this course, attend first class meeting and complete MBB Seminar Lottery (instructions at <https://mbb.harvard.edu/seminars>). Enrollment priority to MBB track juniors and MBB secondary field juniors.

Psychology 1845: Stigma, Discrimination, and Health

TBA

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.

Sociology 1149: Sociology of Science, Technology, and the Body

Vivian Shaw

Spring; W 3-5

Class Capacity: 15

Consent Required: Instructor

Why have ancestry tests become popular in the twenty-first century and what do they tell us about the relationships between race and capitalism? How has contemporary knowledge about cancer and radiation relied upon systems of colonialism and racism? What processes lead to revered organizations such as NASA to adopt clearly risky and unsafe practices? This seminar uses a sociological approach to understanding science and technology. The course focuses on social, cultural, and political dimensions of knowledge production, scientific and medical practices, and the body. While examining the roots of sociological science and technology studies (STS) in the United States, we will consider the transnational dimensions of contemporary science and technology issues and how they continue to evolve within a complicated and highly connected global economy. The class will address key questions about power along lines of race and ethnicity, nation, gender, sexuality, class, and ability that underlie structures of science and technology, as well as how science and technology shape the very meanings of these terms. We will study cases including transnational surrogacy, Black activism around sickle-cell anemia, and the biopolitics of medical triage in West Africa, among others. Students will also develop an expertise in a course-related topic of their choice.

Spanish 61ph: Spanish for Public Health

Adriana Gutierrez

Fall; TTh 12-1:15 (section 1); 1:30-2:45 (section 2)

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.

HISTORY AND PRACTICE OF MEDICINE

Folklore & Mythology 168: Magic and Faith in Medieval Medicine

Joseph Nagy
Fall; TBA

This course explores the ways in which medieval medicine operates at the nexus of science, religion, and magic. Through analyses of medieval literature (medical texts, prose narratives, and poetry) we will seek to better understand how knowledge of the body and healing was preserved and transmitted over time. We explore the role of 'learned medicine,' folk practice, and religion in the medieval concept of healing from an interdisciplinary approach—including folkloristics; economic/urban history; sociology and anthropology of science; gender studies; colonial studies; and cultural history. The major project of the semester will allow each student to develop a writing project centered on aspects of the course that most interest them. A pre-med or potential pre-med student might choose to research and write on medieval herbal medicine in dialogue with modern development of medicines by “Big pharma.” A student who is more interested in cultural studies or religious studies might choose to examine the role of environment (urban v. rural), gender, or religious reform in, for example, the healing traditions of the British Isles and Ireland in the years leading up to the Early Modern period. Similarly, someone with an interest in folklore and mythology might explore the oral-traditional background to popular medical remedies of the Middle Ages and might even consider the wide-reaching continuity of such traditions, many of which are still relevant today.

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 and Literature 90EP: The Global History of Pests

Samuel Dolbee
Fall; W 6-8:45pm
Class Capacity: 10

Consent Required: Instructor

Pests have had impacts large and small on human life, serving as sources of lethal pandemics and minor annoyance alike. But what constitutes a pest has varied greatly over time and space. This course examines these themes with a focus on the late nineteenth century and early twentieth century, an era of optimism for pest eradication and visions of environmental control more broadly. It subsequently turns to the consequences of these efforts--both life-saving and deleterious--to the present. Throughout, the course contextualizes pests as products of sedentary agriculture, empire, and capitalism. Topics include mosquitoes and revolution in Haiti, street dogs and health in Istanbul, and rats and race in Baltimore. The course also touches on the broader cultural resonance of pests, by attending to how the language of pests has come to apply to invasive species, germs, and certain humans. The sources for thinking through these questions are broad, ranging from Frantz Fanon's *The Wretched of the Earth* to Disney public health reels featuring *The Seven Dwarfs* happily spraying insecticides to Rachel Carson's *Silent Spring*. In sum, the course brings together environmental history, the history of medicine, and the history of science to consider how humans have created pests and pests have created humans. *Class Notes:* Seminars meet for two hours of synchronous class discussion each week. To register, complete History & Literature's [application to enroll](#) by August 21. Instructors will notify students of enrollment decisions on August 24. This seminar is open to all undergraduates, but priority will be given to sophomores interested in concentrating in History & Literature.

History of Science 147v: Graphic! Visualizing Medicine from Textbooks to Comics

Soha Bayoumi
Spring; TBA

Visuals play an important role in the history and practice of medicine, from medical textbooks to medical imaging, and from hospital signage and public health posters to comics and graphic novels. This course will examine the use of visuals in medicine but will place particular emphasis on a new academic and creative field known as “graphic medicine”—medical comics and graphic novels. Over the course of the semester, we will ask questions about how attending to the visual allows us to think in new ways about diagnostic practices, therapeutics, medical consumerism, doctor-patient communication, and ways in which patients and caregivers narrate their personal experiences of disease. We will pay careful attention to questions of class, race and

gender, and to larger ethical and political issues raised by our materials.

History of Science 148: Sick and Tired of Being Sick and Tired: A History of Health Disparities in America

Evelynn Hammonds

Spring; TBA

Class Capacity: 10

Consent Required: Instructor

Since the arrival of Africans from Africa to America, their health and health care has been a critical issue for the nation. From the era of slavery to the present, African Americans have been disproportionately burdened by disease and ill health. Health disparities are the "inequalities that occur in the provision of healthcare and access to healthcare across different racial, ethnic and socioeconomic groups." This course examines this issue over the long timeframe from the 17th century to the present. Currently, compared to the white population, African Americans are at an overall greater risk for many serious and life-threatening diseases. This course will examine how these disparities emerged over time. It will explore the strategies and practices that African Americans and other ethnic groups employed to improve their health care. It will also examine the ways that cities, states and the federal government supported or ignored the health of African Americans and other marginalized communities. We will give special attention to the impact of the COVID-19 pandemic on these communities.

History of Science 172: Mental Health Matters: Recurring Themes and Unfinished Business

Anne Harrington

Fall; M 12-2:45 (section 1); M 3-5:45 (section 2)

Class Capacity: 30

Consent Required: Instructor

This new course offers an opportunity to explore some of the unfinished business of modern-day mental health care through an historical lens, from incarceration to health inequities to trauma to the role of drugs and biological thinking. Mental health matters! But history matters too, because understanding the forces that have brought us to our current moment arms us with insights that allow us to do better. This course has also been built from the ground up, to take advantage of the potential of online learning. The course may be online, but it is far from "virtual" -- on the contrary, the heart of this course will be the active real-time engagement it will offer all students who enroll.

Course Notes: Students must register for the plenary class session that meets on Mondays from 12:00-2:45am OR 3:00-5:45pm, as well as a weekly section to be arranged.

POLITICS OF HEALTH

GENED 1092: American Society and Public Policy

Theda Skocpol, Mary Waters

Fall; MW 1:30-2:45

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.

GENED 1170: Confronting COVID-19: Science, History, Policy

Allan Brandt, Ingrid Katz

Fall; TTh 10:30-11:45

We are living in a world radically reshaped by the ongoing COVID-19 pandemic. This course will investigate the wide range of questions raised by the pandemic, its impact and significance. We will also examine how diseases raise fundamental issues for science, policy, and society. In addition to assessing our scientific and medical knowledge about COVID-19, the course will utilize strategies from history, the humanities, and the social sciences to illuminate central policy and political considerations for addressing the epidemic in the U.S. and across the globe. The course will bring experts from a wide array of fields to offer approaches for understanding essential issues raised by the pandemic, including: the science of the virus; medical and public health responses; as well as its impact on economics, society, and culture. We will also broadly consider how epidemics reveal existing social structures such as fundamental health disparities and social inequalities. Among the questions we will explore are: how do we balance basic freedoms and social restrictions as we face critical new threats to human health; and how do we think about risk and vulnerability in the face of uncertainty from both a personal and political viewpoint? As this epidemic unfolds in real time, you will have an opportunity to integrate interdisciplinary perspectives for understanding epidemic disease and how it shapes and reflects powerful social forces and global systems.

History of Science 141: Foreign Bodies: On Health and Migration

Eram Alam

Fall; Th 3-5:45

Class Capacity: 10

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.

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

David Fisher

Fall; W 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.

Course Notes: The seminar meets for 2 hours only within the time block, T, 6-8:45pm. There will be several meetings with an altered time for Jewish holidays - Sept 11: 8:15-10:15pm; Sept 18: No Class; Sept 25: 7:45-9:45pm; Oct 2: 7:45-9:45pm; Nov 6: No Class.

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

GENED 1027: Human Evolution and Human Health

Daniel Lieberman

Spring; TBA

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; TTh 10:30-11:45 (section 1); TTh 7:30-8:45pm (section 2)

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; TBA

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.

Anthropology 1270: Sick: 10,000 Years of Health and Disease

Christina Warinner

Fall; TBA

This course surveys the concept of health and the major nutritional and infectious diseases that have impacted human populations over the past ten thousand years. Special attention is paid to the methods used to detect and identify disease in the past, including skeletal paleopathology, paleodemography, and pathogenomics, as well as human social factors that have influenced human disease exposure and susceptibility, including long-distance migration, agriculture and pastoralism, urbanization, and industrialization.

Class Notes: Meeting time will be determined based on the availability of enrollees.

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 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. Chemical Biology Towards Precision Medicine teaches students principles of chemical biology and human biology relevant to the discovery of safe and effective therapeutics – precision medicine. The course will explore patient-based ‘experiments of nature’ that illuminate disease in the context of human physiology prior to even starting a drug-discovery effort. After the first half of the course on “Foundations” a second half of the class will focus on “Applications” – different diseases for which human biology-based approaches offer promise. The indications to be explored in Chem 101 include: infectious disease (COVID, malaria; TB; HIV/AIDS), psychiatric disease (schizophrenia and bipolar disorder), neurodegenerative disease (Alzheimer’s Disease), diabetes, cancer, cardiovascular and inflammatory bowel disease, regenerative medicine and aging. Lecture materials will be presented asynchronously via recorded videos, while synchronous in-class learning at the regular class time will explore additional features of Chem 101. For example, we will discuss how citizen–scientists can use their knowledge of science to advance important societal challenges through in-class interactions with policy makers, business leaders and philanthropists – in this case to defeat COVID. We will use Scientists to Stop COVID-19 as a case study.

Human Evolutionary Biology 1328: Evolutionary Medicine: Comparative Perspectives on Medical, Surgical and Psychiatric Illness

Barbara Natterson-Horowitz

Fall; TTh 6-7:15

Heart attacks, breast cancer, anxiety and eating disorders occur across the animal kingdom. Taught by a physician, the course explores the species-spanning and evolutionary origins of medical, surgical, and psychiatric illnesses. A ‘mini-medical school’ format will be used to introduce students to ten forms of human pathology emphasizing the typical mechanistic explanations of disease causation offered by physicians followed by in depth evolutionary analyses. Both physical and mental illnesses will be explored across the animal kingdom with a special focus on

how emerging awareness of psychopathology in animals can alter the perception (stigma) and treatment of mental illness in human beings.

Human Evolutionary Biology 1361: Hormones and Life History Physiology

Susan Lipson

Fall; TTh 3-4:15

Class Capacity: 10

Consent Required: Instructor

A survey of human (especially female) life history physiology and the role of hormones in orchestrating key life course transitions, in allocating energy to optimize fitness, and in determining health and disease. This framework will be used as a basis for discussion of real-world issues, including racial disparities in reproductive outcomes and in the tempo of growth and development and questions concerning fertility and infertility.

Course Notes: The course is a hybrid of lectures and seminar discussions.

Recommended Prep: Prerequisite for enrollment: Human Evolutionary Biology 1418, Life Sciences 2, another relevant (e.g., OEB, SCRB) course, or with permission of instructor.

Course Requirements: Anti-req: Cannot be taken for credit if HEB 1351 already complete

Human Evolutionary Biology 1410: Gut Microbiome and Human Health

Rachel Carmody

Spring; TBA

Consent Required: Instructor

Microorganisms residing in the human gastrointestinal tract outnumber our own cells and together encode at least 100 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 the pivotal roles of the gut microbiota in digestion, detoxification, energy regulation, and immunity, and discuss emerging evidence for the microbial modulation of risks and/or treatment of metabolic syndrome, cardiovascular disease, cancer, and behavioral disorders. Students will be introduced to bench and bioinformatics techniques used to investigate gut microbial communities, allowing students to pilot projects that dovetail 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
Fall; MWF 12-1:15

Class Capacity: 100

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.

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

David Silbersweig
Spring; TBA

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.

Class Notes: To be admitted to this course, attend first class meeting and complete MBB Seminar Lottery (instructions at <https://mbb.harvard.edu/seminars>). Enrollment priority to MBB track juniors and MBB secondary field juniors.

Molecular and Cellular Biology 64: Cell Biology in the World

Robert Lue, Jessica Liu
Spring; MW 3-4:15

This course teaches fundamental concepts in cell biology in the context of 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, a comparative discussion of aging in the United States and Japan is used to explore diet, cellular metabolism and its relationship to protein damage and turnover, while the Human Immunodeficiency Virus and AIDS in South Asia is used to explore mucosal immunity and the basis for estimating relative infection risk. Each case delves into the cell biology of major biological events across the life history of the human.

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.

Molecular and Cellular Biology 186: Sleep and Circadian Clocks: from Biology to Public Health

Charles Czeisler, Frank Scheer, Shadab Rahman, Melissa St. Hilaire
Spring; W 3-5:45

The impact of the brain's circadian clock on sleep becomes evident when we travel across time zones or shift our sleep on weekends. How does this clock work? How does light from a tablet or smartphone affect our biology? What is the best time for sleep? What about naps? This course will explore the neurobiology of the brain's circadian clock that regulates the timing and structure of sleep, its interaction with the periodic environment, and the consequences of

circadian disruption in our 24/7 society on health, performance and safety.

Organismic and Evolutionary Biology 50: Genetics and Genomics

Daniel Hart, Robin Hopkins

Fall; TTh 10:30-11:45

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

Joshua Buckholtz

Fall; MW 6-7:15

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) before enrolling in this course.

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

Psychology 980t: Eating Disorders

Rebecca Shingleton

Fall; TTh 3-4:15

Class Capacity: 16

Consent Required: Instructor

The goal of this course is to provide a comprehensive overview of DSM-5 feeding and eating disorders (EDs) with a primary focus on anorexia nervosa, bulimia nervosa, and binge eating disorder. We will explore the etiology (i.e., biological and environmental factors), symptom presentation, and empirically supported treatments across

these EDs. Additional topics will include cultural considerations, gender and EDs, medical complications, impact of media/social media, and novel directions and treatments for these disorders.

Recommended Prep: The Psychology Department requires completion of Science of Living Systems 20 or Psychology 1 the equivalent of introductory psychology (e.g. Psych AP=5 or IB =7 or Psyc S-1) and one of PSY 18, PSY 1861 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 PSY18 or PSY 1861 or Psyc S-1240.

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.

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 1016: Quarantine Blues? Pandemic Life and Mental Health

Rebecca Shingleton, Natasha Parikh

Spring; TBA

Consent Required: Instructor

Class Capacity: 40

The COVID-19 pandemic has hit our world in unprecedented and unexpected ways. In this course, we will study the impact of COVID-19 on mental health and well-being through a clinical, social, and neuroscience lens. We will explore how pandemics affect our thoughts, behaviors, emotions, and physiology as well as discuss evidence-based tools for coping. Additionally, we will look at different stressors (e.g., work from home challenges, social isolation) and how their impact may vary across groups (e.g., health care workers, racial/ethnic groups, SES groups).

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, and 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; MW 4:30-5:45

Consent Required: Instructor

Class Capacity: 100

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 1588: Nudge Psychology: How Small Unseen Forces Shape Thoughts, Feelings, and Behavior

Regan Bernhard

Spring; TBA

Consent Required: Instructor

Class Capacity: 20

Changing the wording used to remind patients of upcoming medical appointments saved a London hospital millions of dollars by drastically dropping the missed appointment rate. When Spain moved from an opt-in to opt-out organ donation system, the number of organ donors skyrocketed. In this course we will study the power of nudges like this -- subtle but powerful changes in the environment that can counteract behavioral biases and encourage better decisions. We will start with learning about

dual-systems models of the mind and then explore how these systems interact to make us vulnerable to bias, heuristics, jumping to conclusions, and erroneous decision-making. Finally, we will investigate how nudges have been leveraged to positively influence behavior and improve social systems. Students will have the opportunity to design and implement their own nudges to improve some aspect of their environments.

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.

Psychology 1861: Developmental Psychopathology

John Weisz

Spring; TBA

An overview of psychological problems and mental disorders in childhood and adolescence. Topics include internalizing conditions (e.g., anxiety, depression), externalizing conditions (e.g., conduct disorder and ADHD), eating disorders, autism, and child responses to maltreatment and other forms of trauma. Theoretical perspectives, diagnostic criteria, etiology, and treatment approaches are examined.

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 150: Human Genetics: Mining Our Genomes for an Understanding of Human Variation and Disease

Kevin Eggan

Spring; TBA

The sequencing of the human genome has revealed the full extent of genetic variation that exists within us as a species. This genetic diversity underlies much of our physical variation as well as our differences in responsiveness to disease stimuli and their treatments. We will explore these and other ramifications of human genetic diversity by applying classical and contemporary genetic tools to the identification of specific genes and pathways that functionally underlie our variable biology.

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

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

Leonard Zon

Spring; TBA

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 195: The Translational Science of Stem Cells

Lee Rubin

Fall; TTh 12-1:15

Class Capacity: 16

Consent Required: Instructor

Through a series of lectures, given by Professor Rubin and Dr. Nayara, as well as some outstanding international speakers, students will be introduced to a broad view of the ways in which stem cell biology can be used in translational research. Topics to be discussed include precision medicine-oriented human disease modeling, discovering drugs that target endogenous stem cells or otherwise promote tissue repair, reprogramming endogenous cells to adopt new identities as treatments for degenerative disorders, and regenerative medicine (cell-based therapies). The goal of the course is to provide a very up-to-date view of where stem cell-associated therapies stand now and, most of all, are heading in the future. The course relies on active participation and will include reading primary research articles. Students will also have the opportunity to act as hosts for outside lecturers. A key objective of the course is to help the students acquire the knowledge to design new ways of treating disease in the form of a term-long paper project.

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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