The Blue Book

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

2018–2019

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## Contents

What Can You Expect from Global Health and Health Policy?  3

This Booklet  4

Secondary Field Requirements  5

Course Listings by GHHP Category

  * Foundational Courses  6
  * Research Courses  8
  * Economics of Health  9
  * Engineering Sciences and Statistics  11
  * Ethics of Health  14
  * Health and Demography  17
  * Health, Culture, and Society  19
  * History and Practice of Medicine  23
  * Politics of Health  26
  * Science of Disease  28

Index of Courses

  * Courses Offered in 2018-2019  35
  * Bracketed Courses 2018-2019  37
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, representing the array of perspectives on global health topics, informing 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-income 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.

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 2018-19 online course catalogs from several Harvard Schools. Since the terms and times in which courses are offered can change from time to time, students should consult the online catalogs available from the different Harvard Schools for the most accurate, up-to-date information. Note that courses that were offered previously and count for GHHP credit are not listed in this document, but a listing of them can be found on our website at http://ghhp.fas.harvard.edu/courses-0.

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 the request to ghhp@fas.harvard.edu, attach a syllabus, and indicate which requirement 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, many courses offered at HSPH are half-semester courses and provide only half the credit of a semester-long course in FAS.

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.

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. 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.
Harvard Secondary Field in Global Health and Health Policy Requirements

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

**One Foundational Course:**

- Empirical and Mathematical Reasoning 20: Why is There No Cure for Health Care?
- Societies of the World 24: Is Globalization Good or Bad for World Health?
- Societies of the World 25: Case Studies in Global Health: Biosocial Perspectives
- United States in the World 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 the student writes an additional thesis chapter on the global health or health policy implications of his/her 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](http://ghhp.fas.harvard.edu)

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

**Health Policy**

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

**Science of Disease**

- Engineering Sciences and Statistics
- Science of Disease

Course options for the eight categories are listed in this Blue Book. Note that the eight categories are divided into two areas, Health Policy and Science of Disease. 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 required research component.)
- 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.
FOUNDATIONAL COURSES

GEN ED: Empirical and Mathematical Reasoning 20: Why is There No Cure for Health Care?
David Cutler
Fall; MWF 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 end HIV/AIDS? 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.
Course Notes: Anti-Req: Students who have taken Economics 1460 may not take this course for credit.

GEN ED: Societies of the World 24: Is Globalization Good or Bad for World Health?
Sue J. Goldie
Spring; T 9-11:45
Consent Required: Instructor
Global health is at a watershed moment - around the world today, the chasm between the health and well-being of disparate populations has never been greater. This course will challenge your assumptions about the state of the world’s populations and broaden your perspectives about how global health relates to development, security, foreign policy, and human rights. We will engage in discussion, dialogue and debate about four extraordinary changes in the world that present great challenges and opportunities to health—unprecedented interconnections across borders, rapidly shifting population dynamics, changing epidemiological patterns, and the increasing importance of health in a global political agenda. Using a conceptual framework as cognitive scaffolding, we organize our thinking across three interconnected domains: (1) the salient features of health conditions and global health challenges, (2) the influence of social, political, environmental and economic determinants, including transnational forces, and (3) the societal responses from the health sector (e.g., health systems) and non-health sector (e.g., public policy). We untangle problems and explore solutions through a variety of population, regional, and sectoral perspectives, confronting both surprising similarities and unexpected differences between and within countries. By the end of the course, you will have a toolbox of approaches, both qualitative and quantitative, that can be drawn upon to independently research, analyze and contextualize complex problems that face our world today. While the course is intended to shift preconceived notions, our ultimate goal is that it will illustrate the power of possibility—unparalleled opportunities for shared learning and collaborative solutions.
Course Notes: Course counts as Social Anthropology.

GEN ED: Societies of the World 25: Case Studies in Global Health: Biosocial Perspectives
Arthur Kleinman, Paul Farmer, Anne Becker, Salmaan Keshavjee
Fall; TTh 10:30-11:45
Examines, through a series of lectures and case-based discussions, a collection of global health problems rooted in rapidly changing social structures that transcend national and other administrative boundaries. Students will explore case studies (addressing AIDS, tuberculosis, mental illness, ebola, cholera, and other topics) and a diverse literature (including epidemiology, anthropology, history, and clinical medicine), focusing on how a broad biosocial analysis might improve the delivery of services designed to lessen the burden of disease, especially among those living in poverty.
Course Notes: Course counts as Social Anthropology.

GEN ED: United States in the World 11: American Health Care Policy
Michael Chernew
Spring; TBA
Health care in America poses fundamental policy challenges to our ability to provide affordable insurance coverage to all Americans; to produce high quality care; and to efficiently use health care resources. This course aims to offer students a solid understanding of the American health care system,
the potential impact of new reform legislation, and challenges that will remain in the future.
**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](https://ghhp.fas.harvard.edu/ghhp-91)

**Global Health and Health Policy 99: Research in Global Health and Health Policy**  
*David Cutler*  
*Spring; W 3-5*  
*Consent Required: Instructor*  
Global health and health policy are interdisciplinary fields that apply the theories and methods of statistics, sociology, political science, economics, management, decision science, and philosophy to the study of population health and health care. Research from these fields influences policymaking in a variety of settings. For example, the Patient Protection and Affordable Care Act (ACA) drew upon health policy research to develop programs for improving access and quality of care in the United States. Similarly, global health research guides international institutions, such as the World Health Organization, in determining health guidelines for all countries. Global health and health policy research can also inform practices inside hospitals, initiate programs for diseases like HIV, and regulate the food and drug industries. This course introduces the fundamentals of research design and methods in global health and health policy and assists students in developing research projects and crafting policy recommendations that can impact health care systems and public health.  
*Course Notes:* This course fulfills the research requirement of the Secondary Field in Global Health and Health Policy and enrollment is ordinarily limited to seniors in the GHHP Secondary Field. Underclass GHHP students may petition to take the course if all other Secondary Field requirements have been met. Course is primarily taught by graduate students in the PhD in Health Policy program and guest lecturers. May not be taken pass/fail.
ECONOMICS OF HEALTH

Freshman Seminar 40k: America’s $3 Trillion Challenge: Health Care Access and Productivity in the Health Reform Era
Alan Garber
Spring: TBA
Class Capacity: 15
Consent Required: Instructor
Health care in the United States is often criticized for its expense, ineffectiveness, and inequity. Every policy solution for increasing access to care faces the challenge of dealing with its costs. Because per capita annual health expenditures exceed $8,000 dollars, the subsidies needed to support health insurance expansions are large and controversial. The fundamental challenge to improving health and health care is to rationalize expenditures by improving the efficiency or productivity of care. This seminar explores barriers to health care productivity in the U.S. along with potential approaches to enhance the value of care.
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.

GEN ED: Empirical and Mathematical Reasoning 20: Why is There No Cure for Health Care?
David Cutler
Fall; MWF 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 end HIV/AIDS? 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.
Course Notes: Students who have taken Economics 1460 may not take this course for credit.

BCMP 230: Principles and Practice of Drug Development
Stan Finkelstein
Fall; TBA
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.
Course Notes: Classes held at MIT Building 4, Room 149. Classes run from September 4, 2018 through December 5, 2018.

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 1389: Economics of Global Health]
Margaret McConnell
Likely to be offered 2020 Spring
This class examines health issues in developing countries from the standpoint of applied economics. Specific topics include: (1) understanding the complex relationship between health, population, and economic growth; (2) understanding key challenges to improving individual and global health (3) recognizing differences between optimal health decisions from an individual, national, and global perspective. We will examine the empirical evidence in support of interventions affecting health including the success and failure of interventions that target infant mortality, diarrhea, worms, AIDS, and malaria as well as smoking and obesity. We will also investigate the role of health insurance as well
as different approaches to deliver health care in resource-constrained settings. Prerequisite: At least one course in microeconomics and one course in applied statistics or econometrics.

**Course Notes:** Offered jointly with the Kennedy School as SUP-518.

**Recommended Prep:** Economics 1010a1, 1010a2 (or 1011a), and 1123 (or 1126).

**Prerequisite:** API-101 OR API-102 OR API-109 OR API-201 OR API-202

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**Economics 1460: Economics of Health Care Policy**  
*Joseph P. Newhouse*  
*Fall; MW 8:45-10*

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:** Students may not take both Economics 1460 and Quantitative Reasoning 24: Health Economics and Policy for credit. Offered jointly with the Kennedy School as SUP-572.

**Class Notes:** This course meets at Harvard Kennedy School in Room L 130.

**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
Fall; MW 10:30-11:45
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 and its role in statistical inference; parameter estimation, including point estimation and maximum likelihood methods; 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 1:30-2:45

Biomedical Engineering 125: Tissue Engineering
David Mooney
Spring; TTh 1:30-2:45
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: Biochemistry or cell biology background.

Biomedical Engineering 130: Neural Control of Movement
Maurice Smith
Spring; TTh 9-10:15
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. Course Notes: Offered in alternate years. Recommended Prep: Mathematics 21b or Applied Mathematics 21b or equivalent, probability and statistics, Physics 11a or equivalent.

Economics 1123: Introduction to Econometrics
James Stock (Fall), Gregory Bruich (Spring)
Fall; MW 9-10:15
Spring; TTh 1:30-2:45
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; TTh 10:30-11:45
Topics include conditional expectations and its linear approximation; best linear predictors; omitted variable bias; panel data methods and the role of unobserved heterogeneity; instrumental variables and the role of randomization; various approaches to inference on causal relations. Course Notes: 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
Patrick Ulrich
Spring; TTh 10:30-11:45
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
Lindsey Moyer
Fall; MWF 12-1:15
A foundation in human organ systems physiology, including cardiac, respiratory, renal, gastrointestinal, and neural systems. Quantitative description of organ systems function and control in terms of physical principles and physiologic mechanisms. Simple mathematical models representing key aspects of organ systems function. Emphasis will be given to understanding the ways in which dysfunction in these systems gives rise to common human disease processes, with an introduction to biomedical devices designed to treat dysfunction. The course is designed for freshman and sophomores.

Course Notes: Open to freshmen.

Government 50: Introduction to Political Science Research Methods
Matthew Blackwell
Fall; TTh 1:30-2:45
This class will introduce students to techniques used for research in the study of politics. Students will learn to think systematically about research design and causality, how data and theory fit together, and how to measure the quantities we care about. Students will learn a ‘toolbox’ of methods—including statistical software—that enable them to execute their research plans. This class is highly recommended for those planning to write a senior thesis.

Course Notes: This course must be taken for letter grade.

MCB 111: Mathematics in Biology
Florian Engert
Spring; TTh 9-10:15
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 9-10:15
Spring; TBA
Provides a conceptual and practical introduction to statistics used in psychology and other behavioral sciences. Covers basic topics in statistics including: measures of central tendency and variability; probability and distributions, correlations and regression, hypothesis testing, t-tests, analysis of variance, and chi-square tests. Includes a lab section with instruction in statistical analysis using a computer program.

Class Notes: There will be an additional lab section to be arranged.

Sociology 156: Quantitative Methods in Sociology
Alexandra Killewald
Spring; MW 10:30-11:45
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 100: Introduction to Quantitative Methods for the Social Sciences and Humanities
Kerrie Nelson
Likely to be offered 2019 Fall
Introduction to key ideas underlying statistical and quantitative reasoning. Topics covered: methods for organizing, summarizing and displaying data; elements of sample surveys, experimental design and observational studies; methods of parameter estimation and hypothesis testing in one- and two-sample problems; regression with one or more predictors; correlation; and analysis of variance. Explores applications in a wide range of fields, including the social and political sciences, medical research, and business and economics.
Course Notes: Only one of the following courses may be taken for credit: Statistics 100, 101, 102, 104.

Statistics 102: Introduction to Statistics for Life Sciences
Kevin A. Rader
Spring; MWF 10:30-11:45
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
Michael Parzen
Fall; MWF 10:30-11:45
Spring; MWF 10:30-11:45
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.

Statistics 110: Introduction to Probability
Joseph Blitzstein
Fall; MW 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, Poisson, Beta, and Gamma distributions.
Recommended Prep: Math 1b or equivalent or above.
ETHICS OF HEALTH

[GEN ED: Ethical Reasoning 33: Medical Ethics and History]
David Shumway Jones
Likely to be offered in 2019 Fall
Disease and medicine have generated ethical dilemmas that have challenged patients and doctors for centuries, from abortion and euthanasia to informed consent and compulsory treatment. Although moral philosophy can clarify the relevant issues, resolution often depends on the details of the specific clinical and social contexts. Taking a historical approach to medical ethics, this class explores how the moral discourse in health care has changed over time in order to understand how social factors influence the persuasiveness of moral arguments. The focus will be on medical practice in the United States in the twentieth century.

GEN ED: Societies of the World 44: Human Trafficking, Slavery, and Abolition in the Modern World
Orlando Patterson
Spring; TTh 10:30-11:45
This course surveys the nature, types and extent of modern servitude, distinguishing broadly between those resulting from international trafficking such as trans-national prostitution, human smuggling into bonded labor, child soldiering and organ trafficking, and more intra-national forms such as debt-bondage and the domestic exploitation of women and other vulnerable groups. Examines the conceptual and theoretical issues raised in attempts to distinguish among these types of differential power relations; the empirical difficulties of estimating the magnitude of what are inherently secretive processes; and the ideological controversies surrounding the subject. Explores ethical, socio-political and practical issues raised by these trends.

Global Health and Health Policy 70: Global Response to Disasters and Refugee Crises
Stephanie Kayden, Michael VanRooyen
Spring; Th 3-5
Class Capacity: 25
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 25. Discussion TBA.

Government 94gk: The Politics and Ethics of Medical Care
Gabriel Katsh
Spring; Th 3-5:45
Class Capacity: 16
Consent Required: Instructor
This course is an introduction to medical ethics and the ways in which political theory can inform our understanding of the moral and political dimensions of medical care. Using case studies as a launching point, we will explore ideas about autonomy, paternalism, beneficence, and distributive justice, and their application to issues such as informed consent, euthanasia, the right to refuse care, the distribution of scarce resources, and conflicts between patient rights and the public good.
Class Notes: Undergraduate seminar. Enrollment by lottery. Please see Gov Dept undergraduate website for details.

Douglas Melton, Michael Sandel
Likely to be offered in 2019 Fall
Explores the moral, political, and scientific implications of new developments in biotechnology. Does science give us the power to alter human nature? If so, how should we exercise this power? The course examines the science and ethics of stem cell research, human cloning, sex selection, genetic engineering, eugenics, genetic discrimination, and human-animal hybrids. Readings will be drawn from literature in the areas of biology, philosophy, and public policy.
Course Notes: May not be taken concurrently with Government 1093. May not be taken for credit if Government 1093 has already been taken. The course is open to both science and non-science concentrators. Ethical Reasoning 22 (Justice) is recommended as a background. This course, when taken for a letter grade, meets the General Education requirement for Ethical Reasoning.
History of Science 136: History of Biotechnology
Sophia Roosth
Spring; MW 3-4:15
Class Capacity: 200
Consent Required: Instructor
What becomes of life when researchers can materially manipulate and technically transform living things? In this course, we will historically investigate biotechnology in the twentieth and twenty-first centuries, paying attention to how efforts to engineer life are grounded in social, cultural, and political contexts. Topics include reproductive technologies, genetic engineering and cloning, genetically modified foods, genomics, stem cells, intellectual property, and biosafety and biosecurity. The course is organized around five crosscutting domains in which we will explore the ethical, legal, and social impacts of biotechnology: (1) food, (2) property and law, (3) sex and reproduction, (4) disease and drugs, and (5) genomic identities. We will read and discuss historical accounts of biotechnology, primary scientific publications, and legal cases. We will learn to evaluate the social constitution and impact of biotechnology on daily life, as well as how to place contemporary issues and debates in biotechnology in historical context.

[History of Science 253: Bioethics, Law, and the Life Sciences]
Sheila Jasanoff
Likely to be offered in 2020 Spring
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.

Ethical Reasoning 45: Brains, Identity, and Moral Agency
Steven Hyman
Spring; TBA
Class Capacity: 100
Consent Required: Instructor
Human beings have the experience of selfhood, of possessing a stable identity, and of agency—the capacity to act for freely chosen reasons. Humans automatically attribute selfhood and intentionality to others and have built concepts of moral agency and legal culpability upon these seemingly ineluctable intuitions. However, observations from neuroscience have long called the truth of these intuitions into question. Debates about selfhood, identity, and agency may have seemed abstract in the past, but new neurotechnologies have made such discussions pressing. Powerful new technologies treat the human brain as a machine to be interrogated, repaired, or enhanced. They have provided new insights into human conditions that affect thinking, emotion, and action. They permit increasingly precise recording of human brain activity and the ability to decode it, facilitating a rudimentary form of ‘mind reading’. Other technologies make it possible to directly connect human brains to computers and machines and to intervene directly in the brain to alter people’s memories, personalities, and goals. This course will use scientific and technological examples that are matters of current ethical and policy debate to question basic assumptions that underlie human self-understanding and to prepare students to be informed participants in discussions of appropriate uses and ethical limits on rapidly advancing neurotechnologies.

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 (or equivalent—permission of instructor required).

XREG: HSPH GHP 214: Health, Human Rights, and the International System
Stephen P. Marks
Spring I; TTh 3:45-5:15
Class Capacity: 28
This course is designed to provide an overview of the way international institutions deal with health and human rights issues. Focus will be on the responses of the United Nations system, including the World Health Organization (WHO), regional organizations, and non-state actors to some of the pressing issues of health from a human rights perspective. Issues to be explored include: mother-to-child transmission of HIV and ARV drug pricing in Africa; traditional practices, such as female genital cutting (FGC); forced sterilization and rights of indigenous people in Latin America; accountability for mass violations of human rights; health of child workers; and international tobacco control. Among the international institutions to be examined are the WHO, UNAIDS, the World Trade Organization (WTO), UNESCO, the Council of Europe, the Organization of American States, the World Bank, and the International Criminal Court (ICC). The principal teaching method is simulation of actual cases, in which students prepare and present positions of various protagonists, based on research into those positions. The ultimate aim of the course is to prepare students to work for and interact professionally with international institutions to advance the health and human rights objectives, whether through governmental, intergovernmental or nongovernmental processes. 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 265: Ethics of Global Health Research
Richard Cash
Spring 2; MW 3:45-5:15
Class Capacity: 30
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
Spring 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
Nir Eyal, Daniel Wikler
Fall 1; MW 8-9:30
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 always 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

Freshman Seminar 22h: My Genes and Cancer
Giovanni Parmigiani
Spring; TBA
Class Capacity: 12
Consent Required: Instructor
The role of a person's genetic background in determining whether he or she will develop cancer, and when, is at the center of public discussions and active scientific investigations. Already, one’s genetic background is used in making life-altering health decision aimed at preventing the occurrence of cancer, as was recently the case with actor Angelina Jolie. This seminar will explore the extent to which current scientific knowledge can inform this type of decisions. The goals is to gain enough understanding of the scientific background to critically evaluate the discourse of a genetic counseling session. The course will proceed at first by laying essential foundations of genetic inheritance in humans; cancer evolutionary theories; statistical risk; and decision-making in health care. Subsequently student will read articles from the scientific and popular press, and listen to podcasts. In class we will discuss the readings. There are no strict prerequisites, though some familiarity with the basic concepts of probability and genetics will be very helpful. There is a good deal of reading and listening, which everyone is expected to do ahead of class. Students can expect readings in genetics and statistics that will stretch them, though it will not always be necessary to understand all the technical details of every paper. Students can also expect to read opinion pieces with which they (as well as I) may disagree. Students will be required to write two 5-page double spaced essays (midterm and final) and to lead a class discussion on the topic of one of their two papers. A typical paper is the critique of a scientific or popular press article, chosen from a list of suggested options or identified independently by the student, with my approval, during the first seven weeks of classes. Attendance is essential, not only for the students’ education, but for the benefit their contributions provide to the others.

Freshman Seminar 24n: Child Health in America
Judith Palfrey
Fall; M 3-5:30
Consent Required: Instructor
How can American health care be improved for children? How a nation cares for its children’s health is often considered a measure of its commitment to the general citizenry and to its future. The members of the seminar will review together the history of children’s health and health care in the United States, exploring the impact of geography, environment, nutrition, clean water, as well as of the scientific discoveries of the late 19th century and the early 20th century and the emergence of the high technology care of the middle and late 20th century. Then they will pose the question, “Does America provide children and youth the best possible health care available in the 21st century?” To approach this question, students will analyze the current causes of illness, disability and death among U.S. children and youth and compare United States epidemiology with that of other developed and developing nations. Students will also explore how child health delivery is financed.

Freshman Seminar 51d: Predicting Life and Death—Quantitative Approaches to Human Health and Disease
Franziska Michor
Spring; TBA
Class Capacity: 12
Consent Required: Instructor
How long does each of us have to live? How does this expectation depend on the extent of exercise, stress, and lifestyle choices such as a love of burgers or long-term smoking? If we are diagnosed with cancer or cardiovascular disease, how many years do we lose, and how does that depend on where we live and how much we earn? Given that millions of people are diagnosed with disease each year, is that data publicly accessible, and is it sufficient to infer the lifespan of an individual patient? Do I want to know how long I have left to live? Can someone else deduce my identity by me being part of a database for lifespan prediction? Do I care if my identity and lifestyle choices become publicly known if it is for the greater good of learning more about preventing disease? How do doctors decide on treatment plans and what can we learn from visiting a radiation oncology clinic where terminal patients are being treated? And finally, how can we use emerging datasets in innovative ways to learn about human health and disease?
Course Notes: There will be a required field trip to the Dana Farber Cancer Institute Radiation Oncology Clinic.

GEN ED: Societies of the World 24: Is Globalization Good or Bad for World Health?
Sue J. Goldie
Spring; T 9-11:45
Class Capacity: 200
Consent Required: Instructor
Global health is at a watershed moment - around the world today, the chasm between the health and well-being of disparate populations has never been greater. This course will challenge your assumptions about the state of the world’s populations and broaden your perspectives about how global health relates to development, security, foreign policy, and human rights. We will engage in discussion,
dialogue and debate about four extraordinary changes in the world that present great challenges and opportunities to health—unprecedented interconnections across borders, rapidly shifting population dynamics, changing epidemiological patterns, and the increasing importance of health in a global political agenda. Using a conceptual framework as cognitive scaffolding, we organize our thinking across three interconnected domains: (1) the salient features of health conditions and global health challenges, (2) the influence of social, political, environmental and economic determinants, including transnational forces, and (3) the societal responses from the health sector (e.g., health systems) and non-health sector (e.g., public policy). We untangle problems and explore solutions through a variety of population, regional, and sectoral perspectives, confronting both surprising similarities and unexpected differences between and within countries. By the end of the course, you will have a toolbox of approaches, both qualitative and quantitative, that can be drawn upon to independently research, analyze and contextualize complex problems that face our world today. While the course is intended to shift preconceived notions, our ultimate goal is that it will illustrate the power of possibility—unparalleled opportunities for shared learning and collaborative solutions.

**[Environmental Science and Public Policy 90d: Planetary Health: Understanding the Human Health Impacts of Accelerating Environmental Change]**
*Samuel Myers, Christopher Golden*
*Likely to be offered in 2020 Spring*
*Consent Required: Instructor*

Rapid human population growth and even more rapid growth in consumption are driving a transformation of most of Earth’s natural systems including its climate system, its oceans, land cover, biogeochemical cycles, biodiversity, and coastal and fresh water systems. These systems underpin global food production, our exposure to infectious disease and natural hazards, even the habitability of the places where we live. We will explore the global human health impacts of this transformation of natural systems.

**Social Studies 68uh: Urban Health and Community Change: Action Planning With Local Stakeholders**
*Flavia Perea*
*Fall; W 12-2:45*
*Class Capacity: 12*
*Consent Required: Instructor*

This is a project-based course on urban community health. We will examine urban health topics from a macro level in the classroom, while exploring community health issues at the local level by engaging with community stakeholders on a health promotion project. We will explore the social conditions people need to be healthy, and strategies to advance health equity that put people in diverse communities on pathways to health as opposed to disparities. To understand how health promoting environments can be created and sustained, we will discuss how community engagement, participatory planning, and cross-sector collaboration can advance health improvement efforts at the local level. There are great possibilities as well as challenges to creating and sustaining healthy communities, particularly in rapidly evolving cities in major metropolitan areas. This course will provide a window into how pressing, highly visible and complex national issues are experienced and addressed in real time, and the real-world complexities involved in advancing meaningful community change. Open to students in all concentrations. Enrollment capped at 10.

**Sociology 1146: Death by Design: Health Inequalities in Global Perspective**
*Jason Beckfield*
*Spring: MW 10:30-11:45*

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

Freshman Seminar 23k: Insights from Narratives of Illness
Jerome Groopman
Spring; TBA
Class Capacity 12
Consent Required: Instructor
A physician occupies a unique perch, regularly witnessing life’s great mysteries: the miracle of birth, the perplexing moment of death, and the struggle to find meaning in suffering. It is no wonder that narratives of illness have been of interest to both physician and non-physician writers. This seminar will examine and interrogate both literary and journalistic dimensions of medical writing. The investigation will be chronological, beginning with “classic” narratives by Tolstoy, Chekhov, and Kafka, and then moving on to more contemporary authors such as William Carlos Williams, Richard Selzer, Oliver Sacks, Susan Sontag, and Philip Roth. Controversial and contentious subjects are sought in these writings: the imbalance of power between physician and patient; how different religions frame the genesis and outcome of disease; the role of quackery, avarice, and ego in molding doctors’ behavior; whether character changes for better or worse when people face their mortality; what is normal and what is abnormal behavior based on culture, neuroscience, and individual versus group norms. The presentation of illness in journalism will be studied in selected readings from the New York Times’ and Boston Globe’s Science sections, as well as periodicals like the New Yorker, The New York Review of Books, Harper’s, and The Atlantic. The members of the seminar will analyze how the media accurately present the science of medicine or play to “pop culture.” The seminar will study not only mainstream medical journalists, but also alternative medical writers such as Andrew Weil also. Patients with different diseases will be invited to speak to members of the seminar about their experiences. Students will try their hands at different forms of medical writing, such as an editorial on physician-assisted suicide that would appear in a newspaper and a short story that describes a personal or family experience with illness and the medical system.

Freshman Seminar 43f: When Bad Things Happen Early in Life: the Effects of Early Adversity on Brain and Behavioral Development
Charles Nelson
Fall; M 12:30-2:30
Class Capacity 15
Consent Required: Instructor
Decades of research tell us that the foundations of healthy development are built early in life. Genes provide the basic blueprint for brain architecture, but experiences shape the activity of the genome and thus determine how the circuitry is wired. Significant adversity can derail developmental processes and distort brain maturation, leading to limited economic and social mobility. Exposure to significant adversity early in life, particularly during critical periods of brain development, may increase risk for a host of chronic physical health problems, including cardiovascular disease, hypertension, diabetes, and addictive behavior; it can also lead to a variety of mental health problems, including depression and anxiety and characterological problems. Science clearly indicates that the longer we wait to intervene on behalf of such children, the more difficult it becomes to achieve healthy outcomes. This constraint is particularly true for children who sustain the wear and tear of so-called “toxic stress”. In this seminar we will critically examine the range of adverse early experiences that impact children growing up in both low and high resource countries. Key themes include a) the nature of the adversity children are exposed to, b) the timing of the adversity c) the chronicity of the adversity, and d) individual differences (including genetic and environmental factors that may confer protection on children exposed to early adversity). We will pay particular attention to the short- and long-term outcomes on physical, neurological and psychological health.

Freshman Seminar 71o: The Heart of Medicine: Patients and Physicians and the Experience of Serious Illness
Susan Block
Fall; T 3-5
Class Capacity 12
Consent Required: Instructor
Sickness and death are universal human experiences. Yet we are often uncomfortable talking and thinking about them in relation to ourselves, and to those whom we love. The core thesis of this seminar is that exploring these human vulnerabilities is a way of learning to live a more meaningful life, strengthening relationships, and helping us be better caretakers of people we love, and of people whom we serve in a professional role. In this seminar, we propose to examine, from multiple perspectives, the social, cultural, psychological, economic, and spiritual factors that influence the experience of serious illness. The seminar will draw on
core readings from the humanities, social sciences, and medicine to deepen understandings of how people experience and live and die with a serious illness. Opportunities for discussion, reflection, live interviews, case analysis, and experiential exercises will take place in class; additional field learning opportunities (e.g., home visits, participation in hospital-based teaching rounds) may also be available outside of class.

GEN ED: Aesthetic and Interpretive Understanding 50: Literature and Medicine
Karen Thornber
Fall; W 3-5:45
Examines the relationship between literature and medicine through creative texts that question understandings, shatter binaries, and reconceptualize notions of normality/disability, health/disease, and life/death. Pays particular attention to the work of physician-writers and narratives by patients. New syllabus for 2018.

GEN ED: Societies of the World 25: Case Studies in Global Health: Biosocial Perspectives
Arthur Kleinman, Paul Farmer, Anne Becker, Salmaan Keshavjee
Fall; TTh 10:30-11:45
Examines, through a series of lectures and case-based discussions, a collection of global health problems rooted in rapidly changing social structures that transcend national and other administrative boundaries. Students will explore case studies (addressing AIDS, tuberculosis, mental illness, ebola, cholera, and other topics) and a diverse literature (including epidemiology, anthropology, history, and clinical medicine), focusing on how a broad biosocial analysis might improve the delivery of services designed to lessen the burden of disease, especially among those living in poverty.

Course Notes: Course counts as Social Anthropology.

[African and African American Studies 197: Poverty, Race, and Health]
David Williams
Likely to be offered in 2019 Fall
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 1900: Counseling as Colonization? Native American Encounters with the Clinical Psy-ences
Joseph Gone
Spring; T 12-2:45
Class Capacity: 18
Consent Required: Instructor
American Indian, First Nations, and other Indigenous communities of the USA and Canada contend with disproportionately high rates of “psychiatric” distress. Many of these communities attribute this distress to their long colonial encounters with European settlers. Concurrently, throughout the 20th century, the disciplines and professions associated with mind, brain, and behavior (e.g., psychiatry, psychology, psychoanalysis) consolidated their authority and influence within mainstream society. These “psy-ences” promote their professional practices (e.g., diagnosis, psychotherapy) as plausible remedies for Indigenous social suffering, but many Indigenous communities remain skeptical of—and resistant to—these clinical approaches, primarily for cultural and political reasons. In this seminar, we will consider whether and how the concepts, categories, tools, and techniques of the mental health professions might be appropriately adapted and/or adopted for use with Indigenous communities in an increasingly globalized world. In recognition of the (post)colonial status of these populations, we will attend closely to alterNative cultural and spiritual approaches that have been identified and promoted by Indigenous people themselves as conducive to healing and wellness. This course is designed for upper-level undergraduate students interested in medical anthropology, professional psychology, pre-medicine, Indigenous studies, and related social and health sciences. Students will participate in regular seminar discussions, write routine responses to assigned readings, and submit major independent research papers addressed to the promotion of Indigenous well-being. Student engagement and exchange during class is essential, so routine attendance and participation are expected throughout the semester.

Global Health and Health Policy 60: Negotiation and Conflict Management: From the Interpersonal to the International
Daniel Shapiro
Fall; M 3-5:45
Class Capacity: 42
Consent Required: Instructor
How can you best negotiate conflict in your own life? How should policymakers negotiate global conflict? Around the world, conflict imposes profound direct and indirect costs on global health and individual well-being, ranging from death and injury to trauma, loss of social networks, and destabilization of political systems. Rather than focusing on how to address the aftermath of conflict and violence, this
course examines theory and practical methods to prevent destructive conflict. We explore conceptual frameworks from which to negotiate its substantive, emotional, and identity-based dimensions, and students apply these methods to real-life dilemmas, ranging from interpersonal disputes between friends to international conflict in the Middle East and elsewhere. This highly interactive course aims to improve students' understanding of conflict and their skill in resolving it, drawing on a variety of learning methodologies including interactive lectures, case simulations, analysis of real-life conflicts, and self-reflection exercises.

Course Notes: Lotteried course, enrollment limited to 42.

[History of Science 140: The Border: Race, Politics, and Health in Modern Mexico]
Gabriela Soto Laveaga
Consent Required: Instructor
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.

History of Science 149: The History and Culture of Stigma
Allan Brandt
Spring; M 12-2:45
Class Capacity: 20
Consent Required: Instructor
This course will investigate the history of a number of stigmatized conditions and diseases including, for example, cancer, mental illness, addiction, obesity, AIDS, and disability. A central goal will be to understand the stigmatization of disease and its effects in diverse historical and cultural contexts. The course will evaluate both the impact of stigmatization on health disparities and outcomes, as well as attempts to de-stigmatize conditions that are subject to discrimination, prejudice, and isolation.

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.
**Psychology 1863: Social Factors in the Development of Psychopathology**  
Sarah Hope Lincoln  
Fall; T 3-5  
Class Capacity: 20  
Consent Required: Instructor  
Does bullying lead to school shootings? Can Facebook cause depression? Are “fitspiration” communities dangerous? This course will review the role social factors (social support, social interactions, social functioning, and the broader social context of communities) relate to the development and maintenance of psychopathology on biological and behavioral levels. In the context of disorders such as schizophrenia, depression (including suicide), eating disorders, and post-traumatic stress disorder, this course will look at how social factors might contribute to the development of mental illness, as well as how social factors might be indicators of mental illness, and finally how social factors might mediate the severity of or even prevent the development of mental illness.  
**Recommended Prep:** The Psychology Department requires completion of Science of Living Systems 20 or Psychology 1 or the equivalent of introductory psychology (e.g. Psych AP=5 or IB =7 or Psyc S-1) and one of PSY 18, PSY 1861 or Psyc S-1240 before enrolling in this course; or permission of instructor.

**Sociology 1168: Global Medicine, Global Health: Cultural Considerations and Clinical Realities**  
Mary Jo Good  
Fall; Th 12-2  
Class Capacity: 18  
Consent Required: Instructor  
This conference course on global medicine and global health examines cultural considerations and clinical realities in comparative environments of risk and trust, in the US and globally, and explores the transformative influence of the medical imagination on contemporary worlds of biomedicine, global health, mental health, and medical humanitarianism. The seminar is designed for students at all levels who wish to explore in depth cultural considerations of global medicine and global health, from a comparative perspective. The seminar will query assumptions, and concepts generated by current movements in global health. We will also explore the subjective experiences of clinicians and patients through clinical narratives, the biotechnical embrace, the medical imaginary, and the political economy of hope.  
Readings will include recently published ethnographies and case studies from around the globe, including the United States, as well as classic essays from sociology designed to enliven our discussions. Students will have the opportunity to draw on their own experiences and to design and pursue their own projects. Weekly response papers of 1-2 pages raising questions and comments based on the readings are required and designed to enhance our queries and discussions. Two essays (8-12 pages) and course attendance and presentation are required.

**Spanish 61ph: Spanish for Public Health**  
Adriana Gutierrez  
Spring; MWF 10:30-11:45 (section 1) & 12-1:15 (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:** Interested students must apply in writing to Dr. Gutiérrez no later than January 15. 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

Freshman Seminar 21h: Modern Civilization and the Rise of Heart Disease
Richard Lee
Fall; M 3-5
Class Capacity: 12
Consent Required: Instructor
Heart diseases have plagued humans since ancient times, but only in the past century has heart disease become epidemic throughout the world. Despite great progress in prevention and therapy, heart diseases will be major causes of death and disability throughout the next century. Modernization of civilization has played a major role in the rise of heart disease. Conversely, advances in heart disease have powerfully changed society and our personal daily behavior. In this seminar, we will examine some of the major intersection events between heart disease and modern society over the past century and consider how this could change the next century in America and throughout the world. The topics include dramatic events like a young physician inserting a urinary drainage tube into his heart—ultimately generating the modern life-saving treatment for heart attacks. We will explore how major lifestyle factors such as tobacco, alcohol, exercise and diet affect health, and how economics and politics often play a role in the complex relationship of health and society. In addition, we will visit a high-technology modern cardiology facility and watch some technology in action.
Course Requirements: Course open to Freshman Students Only.

GEN ED: Culture and Belief 34: Madness and Medicine:
Themes in the History of Psychiatry
Anne Harrington
Fall; MW 1:30-2:45
Psychiatry is one of the most intellectually and socially complex and fraught fields of medicine today, and history offers one powerful strategy for better understanding why. Topics covered in this course include the invention of the mental asylum, early efforts to understand mental disorders as disorders of the brain or biochemistry, the rise of psychoanalysis, psychiatry and war, the rise of psychopharmacology, the making of the DSM, anti-psychiatry, and more.

[Classical Studies 165: Medicine in the Greco-Roman World]
Mark Schiefsky
Likely to be offered in 2020 Spring
Theories and practices of health and healing in the ancient Greco-Roman world, with special emphasis on the relationship of learned medicine to philosophy and other healing traditions.

[East Asian Languages and Civilizations 170: Medicine and the Body in East Asia and in Europe]
Shigehisa Kuriyama
Likely to be offered in 2020 Spring
Comparative historical exploration of the striking differences and unexpected similarities between traditional conceptions of the body in East Asian and European medicine; the evolution of beliefs within medical traditions; the relationship between traditional medicine and contemporary experience.

Global Health and Health Policy 50: The Quality of Health Care in America
Ashish Jha, Anupam Jena
Spring; TTh 3-4:15
Class Capacity: 62
Consent Required: Instructor
Offers information and experiences regarding most important issues and challenges in health care quality. Overview of the dimensions of quality of care, including outcomes, overuse, understuse, 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 62.

[History 97a: “What Is the History of Medicine?”]
Consent Required: Instructor
Likely to be offered in 2020 Spring
The emergence of the science of medicine and its professionalization have been integral aspects of human history. The history of medicine allows us to trace the various traditions that have come together to create "modern medicine." In this section, students will examine the human endeavor to be healthy and to cure disease. The practice of medicine draws on changing ideas about the natural world and the body. It also demands interventions in the physical environment so as to maximize public health, and readily incorporates transformative technologies from other sectors of human society. Students will be asked to reflect on the interaction of medicine and culture through questions such as: How did western powers use biomedicine in the context of empire? How do non-western cultures appropriate and indigenize biomedicine?
History 1924: Violence, Substances and Mental Illness: African Perspectives
Emmanuel Akyeampong, Arthur Kleinman
Spring; W 3-5:45
Class Capacity: 15
Consent Required: Instructor
An introduction to African perspectives on mental illness, exploring the development and practice of psychiatry as a medical field in Africa, examining the grey areas within psychiatric knowledge, and engaging the ongoing debates about the interface between race, culture and psychiatry. Will review African therapeutic systems; witchcraft, causation and mental health; substance abuse; violence and mental illness; and more recent links between HIV/AIDS, loss and depression.

[History of Science 108: Bodies, Sexualities, and Medicine in the Medieval Middle East]
Ahmed Ragab
Likely to be offered in 2019 Fall
This course will examine the ways in which medical, religious, cultural, and political discourses and practices interacted in the medieval and early modern Middle East to create and reflect multiple understandings of human bodies and sexualities. Special attention to debates on health, sexuality, and gender and racial identities.

[History of Science 144: Medical Technologies in Historical Perspective]
Evelynn Hammonds
Likely to be offered in 2019 Fall
The course examines the ways in which various medical technologies shaped and were shaped by physician and nurse practices and goals as well as ideas about patient care in American medicine from the 19th-century to the present. We will look at how the meanings attached to medical technologies grew out of specific historical, social, political and medical contexts. Medical technologies examined include: imaging machines; clinical, diagnostic and genetic tests; reproductive technologies; and artificial organs.

History of Science 146v: Bodies in Flux: Medicine, Gender, and Sexuality in the Modern Middle East
Soha Bayoumi
Spring; TBA
This course examines how bodies, genders and sexualities in the modern Middle East, from the nineteenth century to the Arab revolts, have been shaped and represented via changing and competing discourses. Through a variety of historical, ethnographic, media and literary readings, the course studies multiple and dynamic representations of bodies in flux: medicalized bodies, gendered bodies, sexualized bodies, (re)productive bodies, aging bodies and bodies in revolt. The course pays special attention to medicine and science in their interaction with laws, traditions and religious practices. Some of the topics covered include analyzing histories of and discourses on slavery, femininity and masculinity, homosexuality, health, reproduction, disabilities, circumcision and genital cutting/mutilation and gender-based violence.

History of Science 147: The Changing Concept of Race in Science and Medicine in the U.S.: From Jefferson to Genomics
Evelynn Hammonds
Fall M 3-5:45
Class Capacity: 15
Consent Required: Instructor
This course explores changing concepts of race in American science and medicine, and examines the historical meanings and uses of these concepts in U.S. society from the 18th century to the present. The course asks the following questions: How have diverse scientific and medical disciplines historically defined, measured, and produced knowledge about “race”? How have scientific and medical concepts of race historically interrelated with key political, economic, and social institutions? How do current 21st century genomic concepts of race fit into this larger history of race and science?
Course Notes: Enrollment limited to 15.

History of Science 147v: Graphic! Visualizing Medicine from Textbooks to Comics
Soha Bayoumi
Fall; W 3-5:45
Class Capacity: 25
Consent Required: Instructor
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 178v: History of the Psychotherapies]**

*Elizabeth Lunbeck*

Likely to be offered in 2019 Fall

Examines the history of the current psychotherapeutic landscape, looking at the development, methods, aims, efficacy, and limitations of a range of psychotherapeutic modalities from Freud’s time to our own, among them psychoanalytic, psychodynamic, cognitive, behavioral, manualized, and evidence-based treatments; individual, play, family, and group therapies. Explores tensions between therapy as a quest for self-improvement and a means of relieving symptoms, between focusing on cognition and on behavior, and between mind and brain. Looks at providers and patients, at the testimonies of writers and poets, and at office-based, hospital, and computer therapies. The question of the relationship between professional practices and the rise of a popular therapeutic sensibility is central to the course.

**Psychology 980jo: Understanding Autism**

*Jill Hooley, Katherine Powers*

Spring; TBA

Class Capacity: 16

Consent Required: Instructor

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

*Class Notes:* The instructor is John Knutsen, jknutsen@mgh.harvard.edu.

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

**Women, Gender & Sexuality 1281: Hysterical Women: A History**

*Anouska Bhattacharyya*

Fall; M 12-2:45

Class Capacity: 15

Consent Required: Instructor

What does it mean when contemporary media sources characterize celebrity figures, or frenzied consumers, as 'hysterical'? How are 'hysteria' and 'insanity' related, and what are the historical roots of these loaded concepts? This seminar addresses the complex history of hysteria by asking how this medicalized affliction has assumed a multiplicity of forms, especially on feminized and non-white bodies. As depicted through newspapers, multimedia sources, medical literature, sociological articles, and psychoanalytic texts, 'hysteria' affords a unique lens onto the social, cultural and medical history of mental and physical suffering. In a postcolonial world, the term has taken on even more complexity. As we compose a 'history of hysteria,' we will reflect on who gets to record history and whose narratives get left out.
POLITICS OF HEALTH

Freshman Seminar 27i: Global Health: Comparative Analysis of Healthcare Delivery Systems
Sanjay Saini
Fall; M 12-2:45
Class Capacity: 15
Consent Required: Instructor
This interactive seminar will allow students to obtain greater understanding of challenges faced by US healthcare system through critical comparative analysis of healthcare systems of selected countries from the developed, emerging and developing world. Weekly sessions will comprise of student-led discussion that revolves around an important healthcare issue. Domain expert guest speakers will be included allowing students to network with thought leaders. Student will explore in-depth a topic of their choice and prepare a manuscript potentially for publication in a peer-reviewed journal.

GEN ED: United States in the World 11: American Health Care Policy
Michael Chernew
Spring TBA
Health care in America poses fundamental policy challenges to our ability to protect low income Americans from the costs of illness; to produce high quality care; to efficiently use health care resources, and to allow Americans to die without pain, in the company of family, as they desire. This course aims to offer students a solid understanding of the American health care system, the potential impact of new reform legislation, and challenges that will remain in the future.

GEN ED: United States in the World 31: American Society and Public Policy
Theda Skocpol, Mary Waters
Fall, MW 12-1:15
In the U.S., compared to other major nations, how have social problems been defined and redefined in recent decades; why do they appear differently to various groups; and how are public policies about problematic social conditions debated, devised, and changed? This course synthesizes various kinds of evidence-demographic, attitudinal, ethnographic, and institutional-to probe the creation and impact of major public policies about social support for families and workers; immigration and citizenship; and access to higher education.

Women, Gender & Sexuality 1443: Sex Education: Politics, Policy, and the Production of Knowledge
Keridwen Luis
Fall; T 3-5:45
Class Capacity: 15
Consent Required: Instructor
This course covers the history of sexual education in the U.S. and Global North, the conflation of abstinence and virginity (and the Western history of virginity), the way sex education is used to teach particular gender roles, sex education for those who are categorized as disabled (with an introduction to disability studies), abstinence-only and abstinence-first education and its impact on queer, trans, and intersex teens (with an introduction to queer studies), sex education and consent, sexual assault and teaching about dealing with sexual assault, and, of course, the complex politics of sex education. We will look at research on sexual education in the United States, Canada, the U.K., Australia, and New Zealand, and consider how politics help shape sexual education and education as a whole. And, of course, we will look at the impact of feminism, gay liberation, AIDS, and other social movements on sex education and “social hygiene.” We will also review selected materials from Global South regions and their experiences with sexual education, and consider the intersections between sex education and colonialism.

Course Notes: Because of the use of explicit sexual materials (we will be reviewing sexual education curricula), students must be 18 or older to take this course.

XREG: HKS SUP 575 / HSPH HPM 247: Political Analysis and Strategy for US Health Policy
Robert Blendon
Spring, MW 4:15-6
Class Capacity: 65
Health policymaking in the U.S. has a strong political dimension. This course offers analytical insights into understanding U.S. health policymaking and developing political strategies that influence health policy outcomes. The course provides both the theoretical basis and strategic skills for those in future leadership roles to influence the health policy process. Major topics to be covered include analyzing how health policy is shaped by interest groups, media, public opinion, legislative lobbying, elections, coalition building, policy legacies, institutions, and the politics of information. Student-led case studies focus on marijuana legalization in Colorado, defunding Planned Parenthood, as well as major movements toward comprehensive national health insurance in the U.S. including the Clinton and Obama health plans and the debate over the implementation of the Affordable Care Act. Leaders in political strategy from both the health and political fields will be guest lecturers.
Course Note: Not open to auditors. Also offered by the school of public health as HPM 247.

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 help students understand health systems, and processes to reform them, in middle and low income countries. It presents a purposeful framework for the analysis of why health systems are not able to achieve broad objectives such as health status improvement, financial risk protection and patient satisfaction, as well as greater access to services with better quality and more efficiency. It introduces the concept of control knobs 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 centralization and use of private sector, regulations and persuasion through social marketing. It also includes attention to ethical choices and to political feasibility of reform options. The course involves case studies, class discussion and lectures and mid-term and final papers that apply the framework concepts of a country chosen by each student. Students outside of HSPH must request instructor permission to enroll in this course.

Course Notes: This class has priority enrollment: Wave 1: MPH65-GH, PHD PHS GHP-HS, Wave 2: MPH45-GH & Wave 1, Wave 3: Open Enrollment. Any student who does not meet the Wave 1 or Wave 2 criteria can add themselves to the waitlist (if enrollment requirements are met) at any time during the enrollment period. At the beginning of each priority wave, students on the waitlist who meet the Wave's criteria will be automatically enrolled into any remaining seats in the course (pending no time conflicts). Cross-Registrants and Non-Degree Students will be enrolled on a space available basis after the enrollment deadline for the course. 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%. Students outside of HSPH must request instructor permission to enroll in this course.

Class Notes: Priority Enrollment: Course is required for GHP-SM2 students, MPH65 GH students, PHS-GH Health Systems students, and DrPH Year 1 only. Any remaining seats will be available on a first-come first-serve basis. 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.
Mirror neurons play a role in perception, motor skills and after puberty is revealed by a native or foreign accent. Anatomical and functional properties of the brain and mind are shaped by biology, chemistry, experience and disease. For example, experiences during "critical periods" modify brain chemistry, experience and disease. How might that occur? We study how structure and intention or purpose of a behavior or idea can "pull" our behavior or state of mind, what Aristotle termed "Final Cause." The human brain/mind is a pattern-seeking organ that uses logical patterns to predict the future. From infancy we make sense of the world by seeking logical patterns; mathematics is "core knowledge" of infants. We then use these patterns to look into the future to anticipate where a given pattern will lead and are thus "pulled" to that goal or not; thus the goal can determine behavior and worldview. We read Victor Frankl's "Man's Search for Meaning" which explores human thought, behavior and purpose. This seminar straddles the realms of science, which asks "how?" and the humanities, which traditionally asks "why?" and strives to reconcile these two approaches to understanding the world and our place in it.

**Recommended Prep:** The course is intended for those who have scored -5- on AP Biology or Chemistry. Consider, contrast and evaluate how regenerative capacities have changed during evolution and to brainstorm paths forward towards new solutions for brain regeneration in species, like humans, that have not mastered this art.

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**Freshman Seminar 25x: Human Brain in Health and Disease: A Neurologist's Perspective**

*Thomas Byrne*

*Fall; Tu 6-8*

*Class Capacity: 15*

*Consent Required: Instructor*

Is the human mind an “emergent” property of the brain? How might that occur? We study how structure and properties of the brain and mind are shaped by biology, chemistry, experience and disease. For example, experiences during "critical periods" modify brain anatomy/function; learning a foreign language before or after puberty is revealed by a native or foreign accent. Mirror neurons play a role in perception, motor skills and emotion. Examples include "contagious" happiness or sadness, empathy and theory of mind; their dysfunction may cause autism. Beyond these “bottoms up” explanations, we will also consider a “top down” approach, in which the intention or purpose of a behavior or idea can “pull” our behavior or state of mind, what Aristotle termed “Final Cause.” The human brain/mind is a pattern-seeking organ that uses logical patterns to predict the future. From infancy we make sense of the world by seeking logical patterns; mathematics is “core knowledge” of infants. We then use these patterns to look into the future to anticipate where a given pattern will lead and are thus “pulled” to that goal or not; thus the goal can determine behavior and worldview. We read Victor Frankl's "Man's Search for Meaning" which explores human thought, behavior and purpose. This seminar straddles the realms of science, which asks "how?" and the humanities, which traditionally asks "why?" and strives to reconcile these two approaches to understanding the world and our place in it.

**Recommended Prep:** The course is intended for those who have scored -5- on AP Biology or Chemistry. Consider, contrast and evaluate how regenerative capacities have changed during evolution and to brainstorm paths forward towards new solutions for brain regeneration in species, like humans, that have not mastered this art.

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

*George Demetri*

*Spring: TBA*

*Class Capacity: 15*

*Consent Required: Instructor*

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

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

*David Fisher*

*Fall; T 6-8:30*

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.

**GEN ED: Science of Living Systems 17: Human Physiology: From Personal To Public Health**

*Stephanie Shore, Nancy Long Sieber*

*Spring; MW 10:30-11:45*

*Class Capacity: 60*

The course introduces students to the functioning of the human body in health and disease. Students will examine determinants of their own health (genetics, diet, environment, sleep, exercise, stress, social interactions) and consider how these and other factors impact the health of diverse communities around the world. Emphasis will be placed on how the human body responds to physiologic challenges, such as psychological stress and environmental exposures, and on topics with high public health impact (obesity, smoking, mental health and addiction). Activities include lectures, 2 guided laboratories/demonstrations, structured weekly sections that focus on scientific literacy, and a directed term project.

**Class Notes:** If student interest exceeds the course limit, a random lottery will be conducted. To enter the lottery, you must add the course to your Crimson Cart and explicitly request enrollment permission when prompted. Instructor permission will be granted to only those admitted by the lottery; all students will be notified of their results. See the course website for more details.

**GEN ED: Science of Living Systems 19: Nutrition and Global Health**

*Christopher Duggan, Vasanti Malik*

*Spring; TBA*

*Class Capacity: 250*

**Consent Required: Instructor**

This course will introduce students to nutrition and global health problems through exploration of demographic, epidemiological, biological, social, political, and economic determinants of nutritional status. Emphasis will be placed on the role of nutritional status and dietary intake, both as a determinant and as a consequence, of these health problems. Students will be encouraged to think critically about the major challenges to improve nutrition and health at a global level, with a focus on nutrition and infectious diseases, maternal and child health, and chronic diseases. Nutritional assessment, study design, and efficacy of nutrition interventions, will be explored in detail.

**Class Notes:** If student interest exceeds the course limit, a random lottery will be conducted. To enter the lottery, you must add the course to your Crimson Cart and explicitly request enrollment permission when prompted. Instructor permission will be granted to only those admitted by the lottery; all students will be notified of their results. See the course website for more details.


*Donald Goldmann*

*Fall; MW 1:30-2:45*

*Class Capacity: 60*

**Consent Required: Instructor**

This course will review the profound, often devastating impact nine major infectious diseases have had on society, including politics, war, religion, economics, public health, justice, and ethics. Rather than merely reciting grim statistics and body counts, we will illustrate the effects of these diseases as seen through the lens of history, literature, film, music and drama. We will celebrate how these infections have stimulated revolutionary epidemiologic and scientific advances in detection, treatment, and prevention, but we will also explore the darker side of this story. Behind the veneer of inexorable progress lies the reality that infections have spawned stigmatization, prejudice, exclusion, shameful human experimentation, social injustice, and inequalities in health outcomes. Even today, if we look behind the curtain of miracle drugs and a flourishing medical-industrial complex, we find that these same troubling themes remain relevant across the globe, and in the US. By weaving science together with the humanities, students will learn to address current and emerging global infectious disease threats and the social justice challenges they pose. We will provide enough clinical and scientific background about each infection for students to fully understand why they have had such important societal effects. Classes and sections will be highly interactive, including case studies, games, advocacy “pitches,” a mock trial, debates, role playing, and collaborative learning.

**Class Notes:** If student interest exceeds the course limit, a random lottery will be conducted. To enter the lottery, you must add the course to your Crimson Cart and explicitly request enrollment permission when prompted. Instructor permission will be granted to only those admitted by the lottery; all students will be notified of their results. See the course website for more details.

[Chemistry 101: Chemical Biology Towards Precision Medicine]

*Stuart Schreiber*

*Likely to be offered in 2019 Fall*

Chemical Biology Towards Precision Medicine teaches students principles of modern organic synthesis, chemical biology and human biology relevant to the discovery of safe and effective small-molecule therapeutics in the future. The course will explore patient-based “experiments of nature”
that illuminate disease, including cancer, diabetes, infectious disease and psychiatric disease, among others. Students will then use their knowledge of chemistry and chemical biology to propose research yielding novel small molecules that affect biological systems by mechanisms suggested by the experiments of nature. Chem 101 aims to prepare students for the next decade where academic research tests hypotheses emerging from human biology in humans using novel small-molecule probes.

Human Evolutionary Biology 1328: Evolutionary Medicine: Comparative Perspectives on Medical, Surgical and Psychiatric Illness  
Barbara Natterson-Horowitz  
Fall; T 6-8  
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 1410: Gut Microbiome and Human Health  
Rachel Carmody  
Fall; Th 3-5  
Class Capacity: 12  
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 graduate students. This course will meet from 3:00pm - 5:00 pm on Thursdays.  
Recommended Prep: Life Sciences 2 or permission of instructor.

Life Sciences 2: Evolutionary Human Physiology and Anatomy  
Andrew Biewener, Katherine D. Zink, Carole Hooven, Ian Wallace  
Fall; MWF 12-1:15  
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 replaces OEB 102. This course may not be taken Pass/Fail.  
Class Notes: MWF at 12 and three hours of laboratory/discussion weekly.

Mind, Brain, and Behavior 980b: Exploring Addiction  
Gene Heyman, Paul Harris  
Spring; T 6-8  
Class Capacity: 18  
Consent Required: Instructor  
Course goals include an introduction to the varied and conflicting claims about the nature of addiction. Topics include (1) the characteristics of addiction as revealed in biographies, epidemiological studies, clinical research, and "natural experiments;" (2) the current "drug overdose epidemic," including an opportunity to explore its social-economic correlates; (3) genetic influences on alcohol consumption and AA; (4) drug-induced cognitive changes and their implications for drug use; (5) smoking; (6) consideration of the consequences of legalizing marijuana; and (7) an introduction to research-based, quantitative choice models (e.g., delay discounting). The section on drug overdoses includes access to EXCEL files that combine national, state-level data on drug overdoses, prescription sales, and social-economic measures (e.g., "social capital").  
Class Notes: Preference to juniors in MBB tracks or MBB secondary field.
Mind, Brain, and Behavior 980k: Fighting Cancer with the Mind
Jamie Jacobs; William Pirl
Spring; W 3-5
Class Capacity: 18
Consent Required: Instructor
Using contemporary mind-body practices as context, examines evidence (or lack of evidence) linking psychological practices with cancer survival. We will (1) review theoretical foundations for these links including psychoanalysis, psychoneuroimmunology, and cognitive-behavioral therapy; (2) analyze legitimization of mind-body practices for cancer in popular media; (3) interview mind-body medicine practitioners; and (4) examine published scientific data. Students will choose one mind-body practice for in-depth study, analyzing its underlying theories, scientific evidence, and appeal to patients.
Class Notes: Preference to juniors in MBB tracks or MBB secondary field.

Mind, Brain, and Behavior 980m: Functional Neuroimaging of Psychiatric Disorders: Insights into the Human Brain-Mind
David Silbersweig, Marie-Christine Nizza
Spring; Th 3-5
Class Capacity: 18
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: Preference to juniors in MBB tracks or MBB secondary field. Additional class meetings for site visits to be arranged.

MCB 64: Cell Biology in the World
Robert Lue
Spring; TTh 10:30-11:45
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.
Class Notes: Check out our Course Trailer!

MCB 169: Molecular and Cellular Immunology
Shiv Pillai
Fall; TTh 10:30-11:45
The immune system is frontier at which molecular biology, cell biology, and genetics intersect with the pathogenesis of disease. 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 disease including AIDS and other infectious diseases, autoimmune disorders, allergic disorders, primary immunodeficiency syndromes, transplantation, and cancer.
Recommended Prep: Genetics and cell biology strongly recommended.
Class Notes: Tu., Th., 10-11:30 and a 90-minute section to be arranged.
Course Requirements: Prerequisite: LPS A OR LS 1a

MCB 186: Sleep and Circadian Clocks: from Biology to Public Health
Charles Czeisler, Frank Scheer, Shadab Rahman
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.
OEB 50: Genetics and Genomics
Daniel Hart, Robin Hopkins
Fall; TTh 12-1:15
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, genetic therapy, genetic testing, personalized medicine, and genetic privacy.

Psychology 18: Abnormal Psychology
Joshua Buckholtz
Spring; TBA
Introduction to the study of psychological dysfunction. Focuses on abnormal behavior as it relates to the definition, etiology, and treatment of major symptom domains. This course will emphasize critical evaluation of the causes and mechanisms of mental illness, with special attention paid to recent neuroscientific and genetic research on the neurobiology of psychopathology.

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

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

Psychology 980t: Eating Disorders
Jill Hooley, Katherine Powers
Fall; W 3-5
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 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.

Psychology 1005: Health: A Positive Psychology Perspective
Ellen Langer
Fall; TTh 9-10:15
Consent Required: Instructor
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, PSY 18 or Science of Living Systems 15 before enrolling in this course; or permission of instructor.

Psychology 1201: Your Brain on Drugs: Psychopharmacology
Scott Lukas
Fall; TTh 9-10:15
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 80, MCB 81 or Psyc S-1240 before enrolling in this course; or permission of instructor.
[Psychology 1861: Developmental Psychopathology]
John Weisz
Likely to be offered in 2019 Fall
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 AP=5 or IB =7 or Psyc S-1), or permission of instructor, before enrolling in this course.

[SCRB 150: Human Genetics: Mining Our Genomes for an Understanding of Human Variation and Disease]
Instructor TBA
Likely to be offered in 2020 Fall
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 or MCB 52.

SCRB 167: Stem Cells and Regeneration in the Pathobiology and Treatment of Human Disease
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; MCB 52 or MCB 54.

SCRB 190: Understanding Aging: Degeneration, Regeneration, and the Scientific Search for the Fountain of You
Amy Wagers
Fall; TTh 12-1:15
Consent Required: Instructor
This lecture and discussion course will explore the fundamental molecular and cellular mechanisms that govern organismal aging and contemporary strategies to delay or reverse this process.
Recommended Prep: Life and Physical Sciences A or Life Sciences 1a; Life Sciences 1b; SCRB 10 or MCB 54.

SCRB 192: Principles of Drug Discovery and Development
Gregory Verdine
Spring; MW 9-10:15
Consent Required: Instructor
This interdisciplinary course will examine the process of drug discovery and development through disease-driven examples. Topics include: the efficacy/toxicity balance, the differences between drugs and inhibitors, and the translation of cellular biochemistry to useful medicine.
Course Notes: May not be taken concurrently with Chemistry 192. May not be taken for credit if Chemistry 192 or MCB 192 have already been taken.
Recommended Prep: Chemistry 20/30 or 17/27, Life Sciences 52 or their equivalents, MCB 52, and one year of organic chemistry. MCB 54 is recommended.

SCRB 195: The Translational Science of Stem Cells
Lee Rubin
Fall; MW 3-4:15
Class Capacity: 12
Consent Required: Instructor
This tutorial will emphasize applications of stem cell biology to treating human disease. Students will help decide on the area of focus for the semester from a range of topics, including cell therapy for diabetes, drugs that mobilize stem cells to repair damaged tissue, and disease modeling. Together with the instructor, they will explore this area through lectures and extensive analysis of primary literature.
NOTE: When last offered, the student work culminated in a scientific publication.
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, SCRB 10, SCRB 20 or equivalent.
Index of GHHP Courses

Anthropology 1900: Counseling as Colonization? Native American Encounters with the Clinical Sciences 20
Applied Mathematics 101: Statistical Inference for Scientists and Engineers 11
BCMP 230: Principles and Practice of Drug Development 9
Biomedical Engineering 110: Physiological Systems Analysis 11
Biomedical Engineering 125: Tissue Engineering 11
Biomedical Engineering 130: Neural Control of Movement 11
Economics 1123: Introduction to Econometrics 11
Economics 1126: Quantitative Methods in Economics 11
Economics 1460: Economics of Health Care Policy 10
Economics 980W: Policy Options in Health Economics 9
Engineering Sciences 53: Quantitative Physiology as a Basis for Bioengineering 12
Engineering Sciences 6: Introduction to Environmental Science and Engineering 12
Freshman Seminar 21h: Modern Civilization and the Rise of Heart Disease 23
Freshman Seminar 22h: My Genes and Cancer 17
Freshman Seminar 23k: Insights from Narratives of Illness 19
Freshman Seminar 24n: Child Health in America 17
Freshman Seminar 25x: Human Brain in Health and Disease: A Neurologist's Perspective 28
Freshman Seminar 26w: The Biology and Science of Cancer and Its Treatments: From Empiric to Scientific to Humanistic 28
Freshman Seminar 27i: Global Health: Comparative Analysis of Healthcare Delivery Systems 26
Freshman Seminar 40k: America's $3 Trillion Challenge: Health Care Access and Productivity in the Health Reform Era 9
Freshman Seminar 43f: When Bad Things Happen Early in Life: the Effects of Early Adversity on Brain and Behavioral Development 19
Freshman Seminar 51d: Predicting Life and Death—Quantitative Approaches to Human Health and Disease 17
Freshman Seminar 51m: Skin, Our Largest, Hottest, and Coolest Organ: From Cancer to Cosmetics 28
Freshman Seminar 71o: The Heart of Medicine: Patients and Physicians and the Experience of Serious Illness 19
GEN ED Culture and Belief 34: Madness and Medicine: Themes in the History of Psychiatry 23
GEN ED: Aesthetic and Interpretive Understanding 50: Literature and Medicine 20
GEN ED: Empirical and Mathematical Reasoning 20: Why is There No Cure for Health Care? 6
GEN ED: Empirical and Mathematical Reasoning 20: Why is There No Cure for Health Care? 9
GEN ED: Ethical Reasoning 45: Brains, Identity, and Moral Agency 15
GEN ED: Science of Living Systems 17: Human Physiology: From Personal To Public Health 29
GEN ED: Societies of the World 24: Is Globalization Good or Bad for World Health? 17
GEN ED: Societies of the World 24: Is Globalization Good or Bad for World Health? 6
GEN ED: Societies of the World 25: Case Studies in Global Health: Biosocial Perspectives 20
GEN ED: Societies of the World 25: Case Studies in Global Health: Biosocial Perspectives 6
GEN ED: Societies of the World 44: Human Trafficking, Slavery, and Abolition in the Modern World  14
GEN ED: United States in the World 11: U.S. Health Care Policy  6
GEN ED: United States in the World 11: U.S. Health Care Policy  26
GEN ED: United States in the World 31: American Society and Public Policy  26
Global Health and Health Policy 50: The Quality of Health Care in America  23
Global Health and Health Policy 60: Negotiation and Conflict Management: From the Interpersonal to the International  20
Global Health and Health Policy 70: Global Response to Disasters and Refugee Crises  14
Global Health and Health Policy 91: Supervised Reading and Research  8
Global Health and Health Policy 99: Research in Global Health and Health Policy  8
Government 50: Introduction to Political Science Research Methods  12
Government 94gk: The Politics and Ethics of Medical Care  14
History 1924: Violence, Substances and Mental Illness: African Perspectives  24
History of Science 136: History of Biotechnology  15
History of Science 146v: Bodies in Flux: Medicine, Gender, and Sexuality in the Modern Middle East  24
History of Science 147: The Changing Concept of Race in Science and Medicine in the U.S.: From Jefferson to Genomics  24
History of Science 147v: Graphic! Visualizing Medicine from Textbooks to Comics  24
History of Science 149: The History and Culture of Stigma  21
Human Evolutionary Biology 1328: Evolutionary Medicine: Comparative Perspectives on Medical, Surgical and Psychiatric Illness  30
Human Evolutionary Biology 1410: Gut Microbiome and Human Health  30
Life Sciences 2: Evolutionary Human Physiology and Anatomy  30
MCB 64: Cell Biology in the World  31
MCB 111: Mathematics in Biology  12
MCB 169: Molecular and Cellular Immunology  31
MCB 186: Sleep and Circadian Clocks: from Biology to Public Health  31
Mind, Brain, and Behavior 980b: Exploring Addiction  30
Mind, Brain, and Behavior 980k: Fighting Cancer with the Mind  31
Mind, Brain, and Behavior 980m: Functional Neuroimaging of Psychiatric Disorders: Insights into the Human Brain-Mind  31
Mind, Brain, and Behavior 980p: The Role of Music in Health and Education  21
OEB 50: Genetics and Genomics  32
Psychology 18: Abnormal Psychology  32
Psychology 1005: Health: A Positive Psychology Perspective  32
Psychology 1201: Your Brain on Drugs: Psychopharmacology  32
Psychology 1863: Social Factors in the Development of Psychopathology  22
Psychology 1900: Introduction to Statistics for the Behavioral Sciences  12
Psychology 980jo: Understanding Autism  25
Psychology 980t: Eating Disorders  32
SCRB 167: Stem Cells and Regeneration in the Pathobiology and Treatment of Human Disease  33
SCRB 190: Understanding Aging: Degeneration, Regeneration, and the Scientific Search for the Fountain of Youth  33
SCRB 192: Principles of Drug Discovery and Development  33
SCRB 195: The Translational Science of Stem Cells  33
Social Studies 68uh: Urban Health and Community Change: Action Planning With Local Stakeholders  18
Sociology 1146: Death by Design: Health Inequalities in Global Perspective  18
Sociology 1168: Global Medicine, Global Health: Cultural Considerations and Clinical Realities  22
Sociology 156: Quantitative Methods in Sociology  12
Spanish 61ph: Spanish for Public Health  22
Statistics 102: Introduction to Statistics for Life Sciences  13
Statistics 104: Introduction to Quantitative Methods for Economics  13
Statistics 110: Introduction to Probability  13
Women, Gender & Sexuality 1281: Hysterical Women: A History  25
Women, Gender & Sexuality 1443: Sex Education: Politics, Policy, and the Production of Knowledge  26
XREG: HKS SUP 575 / HSPH HPM 247: Political Analysis and Strategy for US Health Policy  26
XREG: HSPH GHP 244: Health Sector Reform: A Worldwide Perspective  27
XREG: HSPH GHP 265: Ethics of Global Health Research  16
XREG: HSPH GHP 269: The Political Economy of Global Health  27
XREG: HSPH GHP 288: Issues in Health and Human Rights  16
XREG: HSPH ID 250: Ethical Basis of the Practice of Public Health  16

Bracketed Courses in 2018-2019

[African and African American Studies 197: Poverty, Race, and Health]  20
[Chemistry 101: Chemical Biology Towards Precision Medicine]  29
[Classical Studies 165: Medicine in the Greco-Roman World]  23
[East Asian Languages and Civilizations 170: Medicine and the Body in East Asia and in Europe]  23
[Economics 1389: Economics of Global Health]  9
[Environmental Science and Public Policy 90d: Planetary Health: Understanding the Human Health Impacts of Accelerating Environmental Change]  18
[GEN ED: Ethical Reasoning 33: Medical Ethics and History]  14
[History 97a: “What Is the History of Medicine?”]  23
[History of Science 108: Bodies, Sexualities, and Medicine in the Medieval Middle East]  24
[History of Science 140: The Border: Race, Politics, and Health in Modern Mexico]  21
[History of Science 144: Medical Technologies in Historical Perspective]  25
[History of Science 178v: History of the Psychotherapies]  24
[History of Science 253: Bioethics, Law, and the Life Sciences]  15
[Psychology 1861: Developmental Psychopathology]  33
[SCRB 150: Human Genetics: Mining Our Genomes for an Understanding of Human Variation and Disease]  33
[Statistics 100: Introduction to Quantitative Methods for the Social Sciences and Humanities]  13