SCHOOL OF MEDICINE

HEALTH RESEARCH AND POLICY

Emeriti: (Professors) Dan Bloch, John Farquhar, Victor R. Fuchs
Chair: Phil Lavori
Co-Chair: Robert Tibshirani
Professors: Laurence Baker, Bradley Efron, Trevor Hastie, Victor W. Henderson, Mark Hlatky, Iain M. Johnstone, Abby C. King, Philip W. Lavori, Ying Lu, Richard A. Olshen, Julie Parsonnet, Robert Tibshirani, Alice S. Whittemore, Dee W. West, Wing Wong
Associate Professor: Lorene M. Nelson, Chiara Sabatti
Assistant Professors: M. Kate Bundorf, Marc Coram, Allison Kurian, Mei-Chiung Shih, Weiva Sieh, Lu Tian
Assistant Professors (Clinical): Rita Popat, Kristin Sainani
Courtesy Professors: Stephen P. Fortmann, Alan M. Garber, Mary Goldstein, Daniel Kessler, Alex Macario, Yvonne Maldonado, Douglas Owens, Paul Wise
Courtesy Associate Professors: Jay Bhattacharya, Michael K. Gould, Paul Heidenreich, David R. Rogosa
Courtesy Assistant Professors: Grant Miller
Senior Lecturer: Irene Corso
Lecturers: Raymond Balise, Scarlett Gomez, Laurel Habel, De Kun Li, David Lilienfeld, Cynthia O'Malley, Caroline Tanner, Stephen Van Den Eeden
Consulting Professors: Gary Friedman, Elizabeth Holly, Marion Lee, George Lundberg, Peggy Reynolds, Joseph Selby
Consulting Associate Professors: Paul Barnett, Sally Glaser, Pamela Horn-Ross, Esther John, Ciaran Phibbs
Consulting Assistant Professors: Ellen Chang, Christina Clarke-Dur, Theresa Keegan, Bang Nguyen, Ingrid Oakley-Girvan, Rudy Rull, Todd Wagner

Mail Code: 94305-5405
Phone: (650) 723-5456
Web Site: http://hrp.stanford.edu

Courses offered by the Department of Health Research and Policy are listed under the subject code HRP on the *Stanford Bulletin's* ExploreCourses web site.

The Department of Health Research and Policy has three principal areas of scholarly interest:
1. Biostatistics deals with scientific methodology in the medical sciences, emphasizing the use of statistical techniques.
2. Epidemiology is the study of the distribution and determinants of illness and impairment in human populations. Epidemiology training provides analytic tools for clinical and translational research, including studies of disease etiology, prevention, and therapy.
3. Health Services Research is concerned with many aspects of health policy analysis in the public and private sectors

GRADUATE PROGRAMS IN HEALTH RESEARCH POLICY

The Program in Epidemiology and the Program in Health Services Research are housed in the Department of Health Research and Policy. These programs offer M.S. degrees in Epidemiology and in Health Services Research. Students with an interest in pursuing advanced degrees with an emphasis on biostatistics can do so through programs offered by the Department of Statistics. Division of Biostatistics faculty participate in these programs.

For additional information, address inquiries to the Educational Coordinator, Department of Health Research and Policy, Stanford University School of Medicine, HRP Redwood Building, Room T138C, Stanford, California 94305-5405.

HEALTH SERVICES RESEARCH

Director: Mark Hlatky (Professor, Health Research and Policy, and Medicine)
Executive Committee: Laurence Baker (Professor, Health Research and Policy), M. Kate Bundorf (Assistant Professor, Health Research and Policy), Alan Garber (Professor, Medicine), Mary Goldstein (Professor, Medicine), Mark Hlatky (Professor, Health Research and Policy, and Medicine), Douglas Owens (Professor, Medicine)
Participating Faculty and Staff by Department:
Anesthesia: Alex Macario (Professor)
Business: Alain Enthoven (Professor, emeritus), Daniel Kessler (Professor)
Health Research and Policy: Laurence Baker (Professor), Paul Barnett (Consulting Associate Professor), M. Kate Bundorf (Assistant Professor), Victor Fuchs (Professor, emeritus), Trevor Hastie (Professor), Mark Hlatky (Professor), Philip Lavori (Professor), Richard Olshen (Professor), Ciaran Phibbs (Consulting Associate Professor), Joseph Selby (Consulting Professor), Robert Tibshirani (Professor)
Law: Henry Greely (Professor)
Management Science and Engineering: Margaret Brandeau (Professor)
Medicine: Jay Bhattacharya (Assistant Professor), Jeremy Goldhaber-Fiebert (Assistant Professor), Alan Garber (Professor), Mary Goldstein (Professor), Michael Gould (Associate Professor), Paul Heidenreich (Associate Professor), Mark Hlatky (Professor), Grant Miller (Assistant Professor), Douglas Owens (Professor)
Pediatrics: Paul Wise (Professor)
Psychiatry: Rudolph Moos (Professor)
Sociology: Richard Scott (Professor, emeritus)

Program Offices: HRP Redwood Building, Room T138C
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Web Site: http://med.stanford.edu/hsr

MASTER OF SCIENCE IN HEALTH SERVICES RESEARCH

The master's degree program in Health Services Research seeks to train students in the quantitative analysis of issues in health and medical care. The program emphasizes an individually designed program of course work and completion of a master's project under the mentorship of a faculty member. The typical student in the program is either a physician who has completed residency training and is preparing for a research career, or a student with a strong background in policy analysis who wishes to focus on problems in health or medical care. Faculty interests include outcomes research, health economics, health care organization, health care access, quality of care, decision analysis, clinical guidelines, and assessment of patient preferences and quality of life.

To receive the degree, students are expected to demonstrate knowledge of issues in health services research and the quantitative skills necessary for research in this area. Students must take at least 45 units of course work (9 of the units may be double-counted to meet other degree requirements) and write a University thesis. The course work requirements are:
1. At least 8 units from the following group of Health Research and Policy (HRP) core courses: HRP 256, Economics of Health and Medical Care; HRP 391, Health Care Regulation; HRP 392, Analysis of Costs, Risks, and Benefits in Health Care.
2. At least 6 units of graduate-level statistics courses. The sequence of HRP 261, Intermediate Biostatistics: Analysis of Discrete Data; and HRP 262, Intermediate Biostatistics: Regression, Prediction, Survival Analysis, is strongly recommended.

3. At least 3 units of HRP 283, Health Services Research Core Seminar.
4. At least 15 units of HRP research credit from HRP 299, Directed Reading, or HRP 399, Research.
5. An additional set of approved elective courses to complete the program total of at least 45 units.

For additional information, address inquiries to the Educational Coordinator, Department of Health Research and Policy, Stanford University School of Medicine, HRP Redwood Building, Room T138C, Stanford, California 94305-5405.

EPIDEMIOLOGY

Director: Victor W. Henderson (Professor, Health Research and Policy, and Neurology and Neurological Sciences)

Core Faculty and Academic Teaching Staff: Raymond R. Balise (Lecturer, Health Research and Policy), Gary D. Friedman (Consulting Professor, Health Research and Policy), Victor W. Henderson (Professor, Health Research and Policy, and Neurology and Neurological Sciences), Abby C. King (Professor, Health Research and Policy, and Medicine), Allison Kurian (Assistant Professor, Medicine, and Health Research and Policy), Philip Lavori (Professor, Health Research and Policy), Yvonne A. Maldonado (Professor, Pediatrics), Lorene M. Nelson (Associate Professor, Health Research and Policy), Julie Parsonnet (Professor, Medicine, and Health Research and Policy), Rita A. Popat (Clinical Assistant Professor, Health Research and Policy), Kristin L. Sainani (Clinical Assistant Professor, Health Research and Policy), Weiva Sieh (Assistant Professor, Health Research and Policy), Dee W. West (Professor, Health Research and Policy), Alice S. Whittemore (Professor, Health Research and Policy)

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MASTER OF SCIENCE IN EPIDEMIOLOGY

The Graduate Program in Epidemiology offers instruction and interdisciplinary research opportunities leading to the M.S. degree in Epidemiology. Epidemiology is the study of the distribution and determinants of illness and impairment in human populations. It is important in its own right, and epidemiologic methods are used by clinical investigators and by other scientists who conduct observational and experimental research on the identification, prevention, and treatment of human disorders.

Core and affiliated faculty come from the Department of Health Research and Policy; other Stanford University departments, and notable Bay Area research facilities. The Program has particular strengths in cancer epidemiology, cardiovascular disease epidemiology, infectious disease epidemiology, musculoskeletal disease epidemiology, neuroepidemiology, and aspects of epidemiologic methods, genetic epidemiology, and reproductive epidemiology and women's health.

The mission of the Stanford University School of Medicine is to be a premier research-intensive medical school that improves health through leadership and collaborative discoveries and innovation in patient care, education and research. With support from a NIH Clinical and Translational Science Award, the graduate program in Epidemiology fosters this mission through the training of physician investigators in techniques of clinical research. We also consider students from other disciplines who would benefit from formal training in epidemiologic methods.

A typical student has the M.D. degree and is in the fellowship stage of his or her postgraduate training, or in an early stage of faculty development. Other students may not have prior clinical training. These may include behavioral, social, and life scientists; law students; and students with the baccalaureate degree. They may wish to bring an epidemiologic orientation to their research or practice, or they may be considering careers in epidemiology or a related discipline.

To receive the M.S. degree, students are expected to obtain a grounding in epidemiologic methods and applied biostatistics and to demonstrate research skills through the completion of a thesis. Students must complete at least 45 units of course work:

1. Epidemiologic methods: HRP 225, Design and Conduct of Clinical and Epidemiologic Studies; HRP 226, Advanced Epidemiologic and Clinical Research Methods; HRP 251, Design and Conduct of Clinical Trials.
2. Biostatistics: HRP 259, Introduction to Probability and Statistics for Epidemiology; HRP 261, Intermediate Biostatistics: Analysis of Discrete Data; HRP 262, Intermediate Biostatistics: Regression, Prediction, Survival Analysis.
3. Research seminars: HRP 236, Epidemiology Research Seminar (at least 3 units).
4. Research: HRP 399, Master thesis (at least 12 units).
5. Research conduct: Students must complete MED 255, Responsible Conduct of Research, and attend a Human Subjects Institutional Review Board meeting.
6. Additional approved selective and elective courses to complete the program total of at least 45 units.

Students are assigned a methodology mentor from the Department of Health Research and Policy, and they also select a research mentor, who may be from another department. For physicians, the research mentor is often an affiliated faculty member from the department of the student's clinical specialty.

University requirements for the M.S. degree are described in the "Graduate Degrees" section of this bulletin. Other programmatic requirements are in *Graduate Program in Epidemiology, Information and Guidelines*, available from the educational coordinator in the Department of Health Research and Policy.

HEALTH RESEARCH AND POLICY (HRP)

UNDERGRADUATE COURSES IN HEALTH RESEARCH AND POLICY

HRP 89Q. Introduction to Cross Cultural Issues in Medicine
(S,Sem) Stanford Introductory Seminar. Preference to sophomores. Introduction to social factors that impact health care delivery, such as ethnicity, immigration, language barriers, and patient service expectations. Focus is on developing a framework to understand culturally unique and non-English speaking populations in the health care system. GER:EC-AmerCul
3 units, Win (Corso, I)

HRP 199. Undergraduate Research
Students undertake investigations sponsored by individual faculty members. Prerequisite: consent of instructor.
1-18 units, Aut (Staff), Win (Staff), Spr (Staff), Sum (Staff)

GRADUATE COURSES IN HEALTH RESEARCH AND POLICY

HRP 207. Introduction to Concepts and Methods in Health Services and Policy Research I
Primarily for medical students in the Health Services and Policy Research scholarly concentration. Topics include health economics, statistics, decision analysis, study design, quality measurement, cost benefit and effectiveness analysis, and evidence based guidelines.
2 units, Aut (Haberland, C)

HRP 208. Introduction to Concepts and Methods in Health Services and Policy Research II
Primarily for medical students in the Health Services and Policy Research scholarly concentration; continuation of 207. Topics include health economics, statistics, decision analysis, study design, quality measurement, cost benefit and effectiveness analysis, and evidence based guidelines. Recommended: 207.
2 units, Win (Haberland, C)

HRP 209. FDA's Regulation of Health Care
(Same as LAW 458) Open to law and medical students; other graduate students by consent of instructor. The FDA's regulatory authority over drugs, biologics, medical devices, and dietary supplements. The nature of the pharmaceutical, biotech, medical device, and nutritional supplement industries.
2-3 units, not given this year

HRP 210. Health Law and Policy
(Same as Law 313) Open to law or medical students; other graduate students by consent of instructor. Focus this term is on the American health care financing system and its reform, how the present system works, diagnosing where it does not work, and exploring how it might be improved.
3 units, Aut (Greely, H)

HRP 211. Law and the Biosciences
(Same as LAW 368) Legal, social, and ethical issues arising from advances in neuroscience, including effects upon law and society through improvements in predicting illnesses and behaviors, reading minds through neuroimaging, understanding responsibility and consciousness, treating criminal behavior, cognitive enhancement.
3 units, not given this year

HRP 212. Crosscultural Medicine
Developing interviewing and behavioral skills needed to facilitate culturally relevant health care across all population groups. Discussions focus on explicit and implicit cultural influences operating in formal and informal medical contexts.
3 units, Spr (Corso, I)

HRP 214. Scientific Writing
Step-by-step through the process of writing and publishing a scientific manuscript. How to write effectively, concisely, and clearly. Preparation of an actual scientific manuscript. Students are encouraged to bring a manuscript on which they are currently working to develop and polish throughout the course.
2-3 units, Win (Sainani, K)

HRP 215. Scientific Writing for Basic and Translational Scientists
How to write clearly, concisely, and effectively. Focus is on the process of writing and publishing a scientific manuscript. Not intended for Epidemiology graduate students.
2-3 units, Sum (Sainani, K)

HRP 216. Analytical and Practical Issues in the Conduct of Clinical and Epidemiologic Research
Topics include: advanced aspects of study design and data analyses; development of health measurement instruments; methods of summarizing literature and quantifying effect sizes; and multivariable nature of health events in human populations. 3 units requires a term paper. Prerequisites: 225, and 258 or 261, or consent of instructor.
2-3 units, Spr (Staff)

HRP 220. Biotechnology Law and Policy
(Same as LAW 440) Open to law or medical students; other graduate students by consent of the instructor. Focus is on the biotechnology industry, with some discussion of the med tech or medical device industry and the pharmaceutical industry. The life cycle of a biotech firm, from a good idea to a start-up company to FDA approval and beyond. Guest speakers. Group project making law and business recommendations about a biotech firm.
3 units, Spr (Greely, H)

HRP 221. Law and the Biosciences: Genetics
(Same as LAW 480) Open to all law or medical students; other graduate students by consent of the instructor. Ethical, legal, and social issues arising primarily from advances in knowledge of human genetics. May also include a section on stem cell research.
3 units, Spr (Greely, H)

HRP 223. Epidemiologic Analysis: Data Management and Statistical Programming
The skills required for management and analysis of biomedical data. Topics include importing and exporting data from multiple database systems, visualizing and cleaning data, data management for multicenter projects, and data security. Introduction to applied statistical programming relevant to epidemiologic and clinical research. No previous programming experience required.
2-3 units, Aut (Balise, R)

HRP 225. Design and Conduct of Clinical and Epidemiologic Studies
Intermediate-level. The skills to design, carry out, and interpret epidemiologic studies, particularly of chronic diseases. Topics: epidemiologic concepts, sources of data, cohort studies, case-control studies, cross-sectional studies, sampling, estimating sample size, questionnaire design, and the effects of measurement error. Prerequisite: A basic/introductory course in statistics or consent of instructor.
3-4 units, Aut (Popat, R)

HRP 226. Advanced Epidemiologic and Clinical Research Methods
Principles of measurement, measures of effect, confounding, effect modification, and strategies for minimizing bias in clinical and epidemiologic studies. Prerequisite: 225 or consent of instructor.
3-4 units, Win (Nelson, L)

HRP 228. Genetic Epidemiology
Reading of seminal papers in genetic epidemiology. Topics include human genetic variation, genetics of complex diseases, genome-wide association studies, and new genomic technologies. Provides a background for clinicians, epidemiologists, and other scientists to incorporate the study of genetic factors into human disease research. Prerequisite: HRP 225 or consent of instructor.
2 units, Spr (Staff)

HRP 229. Methods in Chronic Disease Epidemiology
Descriptive epidemiology and sources of incidence and mortality data; biological bases of neurological, musculoskeletal, cardiovascular, and other chronic diseases except cancer; methodological and analytic issues relevant to chronic epidemiologic research; causal inference; major environmental risk factors; genetic susceptibility; and examples of current research and critiques of literature. Prerequisite: 225 or consent of instructor.
2-3 units, alternate years, not given this year

HRP 230. Cancer Epidemiology
Descriptive epidemiology and sources of incidence/mortality data; the biological basis of carcinogenesis and its implications for epidemiologic research; methodological issues relevant to cancer research; causal inference; major environmental risk factors; genetic susceptibility; cancer control; examples of current research; and critique of the literature. 3 units requires paper or project. Prerequisite: 225, or consent of instructor.
2-3 units, Win (Staff)

HRP 231. Epidemiology of Infectious Diseases
Principles of the transmission of the infectious agents (viruses, bacteria, rickettsiae, mycoplasma, fungi, and protozoan and helminth parasites). The role of vectors, reservoirs, and environmental factors. Pathogen and host characteristics that determine the spectrum of infection and disease. Endemicity, outbreaks, and epidemics of selected infectious diseases. Principles of control and surveillance.
3 units, Win (Staff)

HRP 236. Epidemiology Research Seminar
Weekly forum for ongoing epidemiologic research by faculty, staff, guests, and students, emphasizing research issues relevant to disease causation, prevention, and treatment. May be repeated for credit.
1 unit, Aut (Henderson, V), Win (West, D), Spr (Whittemore, A)

HRP 238. Genes and Environment in Disease Causation: Implications for Medicine and Public Health

(Same as HUMBIO 159) The historical, contemporary, and future research and practice among genetics, epidemiology, clinical medicine, and public health as a source of insight for medicine and public health. Genetic and environmental contributions to multifactorial diseases; multidisciplinary approach to enhancing detection and diagnosis. The impact of the Human Genome Project on analysis of cardiovascular and neurological diseases, and cancer. Ethical and social issues in the use of genetic information. Prerequisite: basic course in genetics; for undergraduates, Human Biology core or equivalent or consent of instructor.
2-3 units, Win (Popat, R)

HRP 239. Understanding Statistical Models and their Social Science Applications

(Same as EDUC 260X, STATS 209) Critical examination of statistical methods in social science applications, especially for cause and effect determinations. Topics: path analysis, multilevel models, matching and propensity score methods, analysis of covariance, instrumental variables, compliance, longitudinal data, mediating and moderating variables. See http://www-stat.stanford.edu/~rag/stat209. Prerequisite: intermediate-level statistical methods
3 units, Win (Rogosa, D)

HRP 251. Design and Conduct of Clinical Trials

The rationale for phases 1-3 clinical trials, the recruitment of subjects, techniques for randomization, data collection and endpoints, interim monitoring, and reporting of results. Emphasis is on the theoretical underpinnings of clinical research and the practical aspects of conducting clinical trials.
3 units, Spr (Henderson, V; Lavori, P)

HRP 252. Outcomes Analysis

(Same as BIOMEDIN 251) Methods of conducting empirical studies which use large existing medical, survey, and other databases to ask both clinical and policy questions. Econometric and statistical models used to conduct medical outcomes research. How research is conducted on medical and health economics questions when a randomized trial is impossible. Problem sets emphasize hands-on data analysis and application of methods, including re-analyses of well-known studies. Prerequisites: one or more courses in probability, and statistics or biostatistics.
3 units, Spr (Bhattacharya, J)

HRP 256. Economics of Health and Medical Care

(Same as BIOMEDIN 156, BIOMEDIN 256, ECON 126) Graduate students with research interests should take ECON 248. Institutional, theoretical, and empirical analysis of the problems of health and medical care. Topics: institutions in the health sector; measurement and valuation of health; nonmedical determinants of health; medical technology and technology assessment; demand for medical care and medical insurance; physicians, hospitals, and managed care; international comparisons. Prerequisites: ECON 50 and ECON 102A or equivalent statistics. Recommended: ECON 51.
5 units, Aut (Bhattacharya, J)

HRP 258. Introduction to Probability and Statistics for Clinical Research

Open to medical and graduate students; required of medical students in the Clinical Research Scholarly Concentration. Tools to evaluate medical literature. Topics include random variables, expectation, variance, probability distributions, the central limit theorem, sampling theory, hypothesis testing, confidence intervals, correlation, regression, analysis of variance, and survival analysis.
3 units, Spr (Sainani, K)

HRP 259. Introduction to Probability and Statistics for Epidemiology

Topics: random variables, expectation, variance, probability distributions, the central limit theorem, sampling theory, hypothesis testing, confidence intervals. Correlation, regression, analysis of variance, and nonparametric tests. Introduction to least squares and maximum likelihood estimation. Emphasis is on medical applications.
4-5 units, Aut (Sainani, K)

HRP 260A. Workshop in Biostatistics

(Same as STATS 260A) Applications of statistical techniques to current problems in medical science.
1-2 units, Aut (Olshen, R)

HRP 260B. Workshop in Biostatistics

(Same as STATS 260B) Applications of statistical techniques to current problems in medical science.
1-2 units, Win (Olshen, R)

HRP 260C. Workshop in Biostatistics

(Same as STATS 260C) Applications of statistical techniques to current problems in medical science.
1-2 units, Spr (Olshen, R)

HRP 261. Intermediate Biostatistics: Analysis of Discrete Data

(Same as BIOMEDIN 233, STATS 261) Methods for analyzing data from case-control and cross-sectional studies: the 2x2 table, chi-square test, Fisher's exact test, odds ratios, Mantel-Haenzel methods, stratification, tests for matched data, logistic regression, conditional logistic regression. Emphasis is on data analysis in SAS. Special topics: cross-fold validation and bootstrap inference.
3 units, Win (Sainani, K)

HRP 262. Intermediate Biostatistics: Regression, Prediction, Survival Analysis

(Same as STATS 262) Methods for analyzing longitudinal data. Topics include Kaplan-Meier methods, Cox regression, hazard ratios, time-dependent variables, longitudinal data structures, profile plots, missing data, modeling change, MANOVA, repeated-measures ANOVA, GEE, and mixed models. Emphasis is on practical applications. Prerequisites: basic ANOVA and linear regression.
3 units, Spr (Staff)

HRP 280. Spanish for Medical Students

(Same as SPANLANG 121M) Goal is a practical and culturally appropriate command of spoken Spanish. Emphasis is on taking the medical history. Topics include the human body, hospital procedures, diagnostics, food, and essential doctor-patient phrases when dealing with Spanish-speaking patients. Series can be taken independently, depending on the level of prior knowledge.
3 units, Aut (Corso, I)

HRP 281. Spanish for Medical Students

(Same as SPANLANG 122M) Goal is a practical and culturally appropriate command of spoken Spanish. Emphasis is on performing a physical examination. Topics include the human body, hospital procedures, diagnostics, food, and essential doctor-patient phrases when dealing with Spanish-speaking patients. Series can be taken independently, depending on the level of prior knowledge.
3 units, Win (Corso, I)

HRP 282. Spanish for Medical Students

(Same as SPANLANG 123M) Goal is a practical and culturally appropriate command of spoken Spanish. Emphasis is on different specialties and medical conditions. Topics include the human body, hospital procedures, diagnostics, food, and essential doctor-patient phrases when dealing with Spanish-speaking patients. Series can be taken independently, depending on the level of prior knowledge.
3 units, Spr (Corso, I)

HRP 283. Health Services Research Core Seminar

Presentation of research in progress and tutorials in the field of health services research.
1 unit, Aut (Haberland, C), Win (Haberland, C), Spr (Haberland, C)

HRP 290. Advanced Medical Spanish Oral Communication

Enrollment limited to medical students. Designed to further develop linguistic skills, covering all medical specialties according to student needs. Sessions also include topics on patient education and diseases, such as diabetes, asthma, TB, and CVDs.
3 units, Aut (Corso, I), Win (Corso, I), Spr (Corso, I)

HRP 299. Directed Reading in Health Research and Policy
Epidemiology, health services research, preventive medicine, medical genetics, public health, economics of medical care, occupational or environmental medicine, international health, or related fields. May be repeated for credit. Prerequisite: consent of instructor.
1-18 units, Aut (Staff), Win (Staff), Spr (Staff), Sum (Staff)

HRP 351. Health Care Technology: From Innovators to Providers to Patients
(Same as GSBGEN 351) How health care businesses use biotechnology, medical technology and information technology to improve patient outcomes and manage costs. New technologies commercialized by innovator biotech and pharmaceutical companies, device manufacturers, diagnostics developers, and health IT companies, and adopted by hospitals and physicians in patient care and paid for by third-party payers. Case studies: how innovators finance and manage new product development; clinical trial management and gaining regulatory approval; strategies to drive product adoption; business models to drive innovation; clinical and business models for adopting new technology; organizational change; criteria for reimbursement and coverage decisions; selective provider network design to manage added costs; and IT-intensive business models. Guest speakers and panelists.
4 units, not given this year

HRP 370. Medical Scholars Research
Provides an opportunity for student and faculty interaction, as well as academic credit and financial support, to medical students who undertake original research. Enrollment is limited to students with approved projects.
4-18 units, Aut (Staff), Win (Staff), Spr (Staff), Sum (Staff)

HRP 391. Health Care Regulation, Finance and Policy
(Same as PUBLPOL 231) (SAME AS LAW 348) Provides the legal, institutional, and economic background necessary to understand the financing and production of health services in the U.S. Potential topics include: health reform, health insurance (Medicare and Medicaid, employer-sponsored insurance, the uninsured), medical malpractice and quality regulation, pharmaceuticals, the corporate practice of medicine, regulation of fraud and abuse, and international comparisons.
3 units, Win (Kessler, D)

HRP 392. Analysis of Costs, Risks, and Benefits of Health Care
(Same as BIOMEDIN 432) (Same as MGTECON 332) For graduate students. How to do cost/benefit analysis when the output is difficult or impossible to measure. How do M.B.A. analytic tools apply in health services? Literature on the principles of cost/benefit analysis applied to health care. Critical review of actual studies. Emphasis is on the art of practical application.
4 units, Aut (Garber, A; Owens, D)

HRP 399. Graduate Research
Investigations sponsored by individual faculty members. Prerequisite: consent of instructor.
1-18 units, Aut (Staff), Win (Staff), Spr (Staff), Sum (Staff)