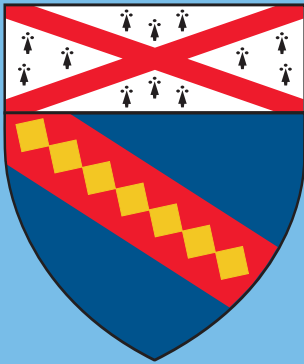


Epidemiology and Public Health 2005–2006



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Series 101 Number 11 August 25, 2005

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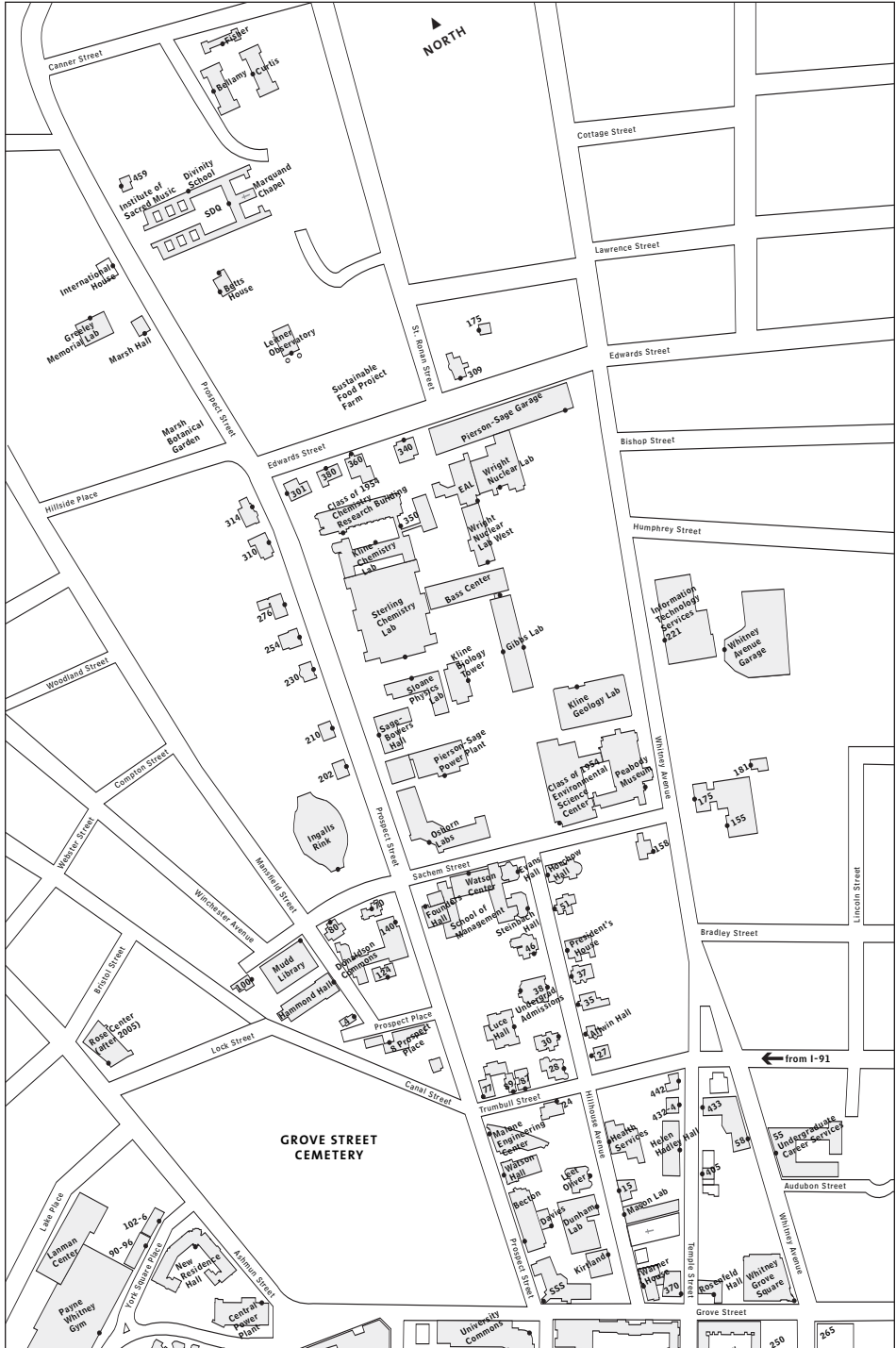
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Epidemiology
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2005–2006

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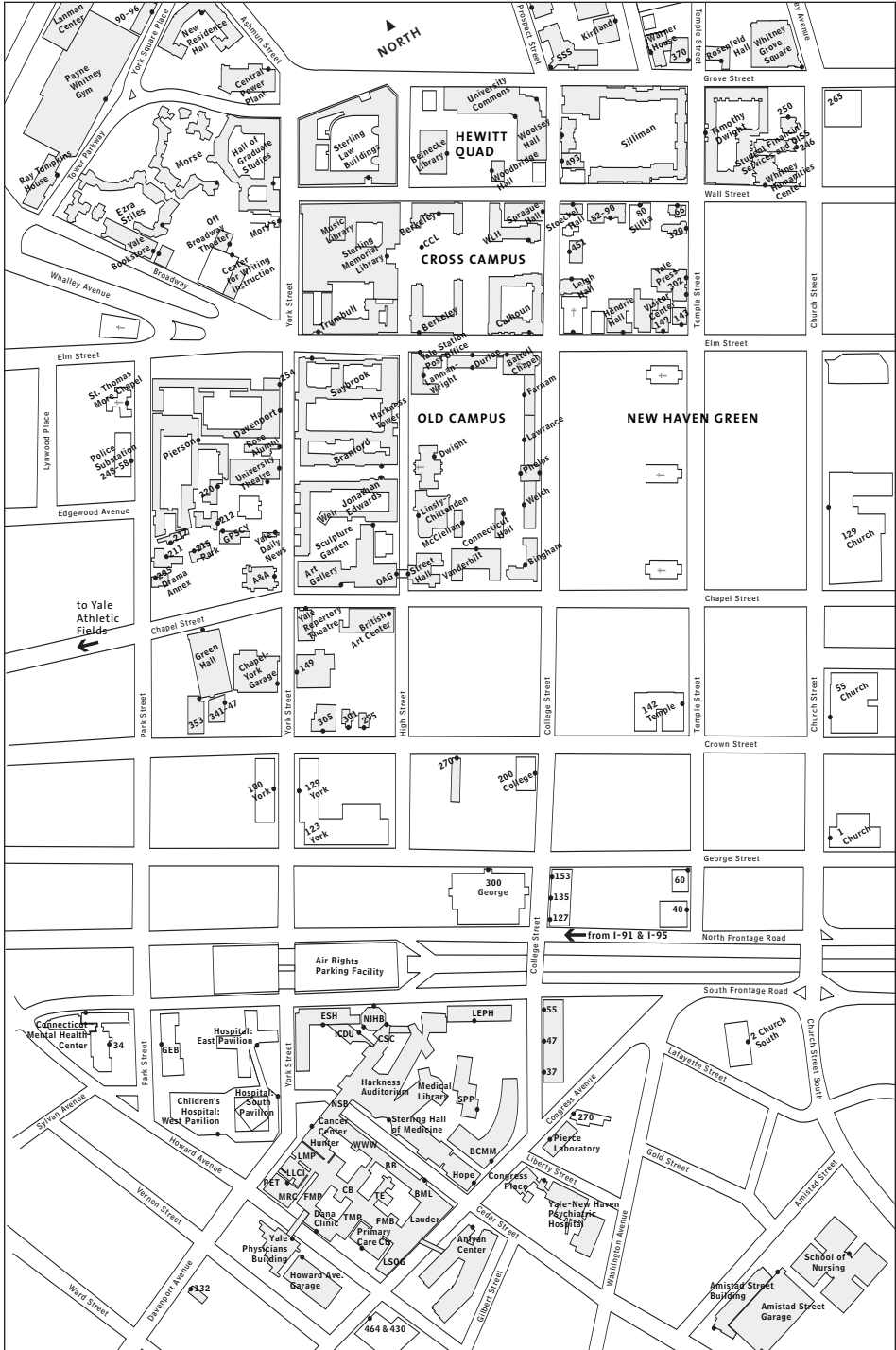
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YALE UNIVERSITY CAMPUS NORTH



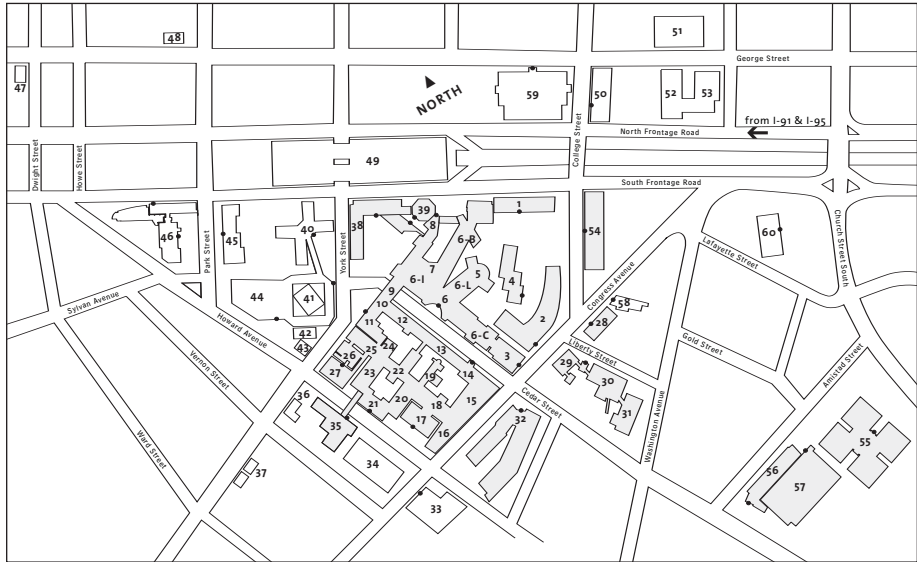
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YALE UNIVERSITY CAMPUS SOUTH & YALE MEDICAL CENTER (see also p. 4)



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YALE MEDICAL CENTER BUILDINGS AND ADDRESSES



1. Laboratory of Epidemiology and Public Health, 60 College St.
2. Boyer Center for Molecular Medicine
3. Jane Ellen Hope Building
4. Sterling Power Plant
5. Harvey Cushing/John Hay Whitney Medical Library
6. Sterling Hall of Medicine, 333 Cedar St. Wings: B, C, I & L
7. Mary S. Harkness Memorial Auditorium
8. Child Study Center
9. Nathan Smith Building (Bridge)
10. Yale Cancer Center
11. Hunter Building, 15 York St.
12. William Wirt Winchester Building
13. Yale Eye Center (Boardman Building), 330 Cedar St.
14. Brady Memorial Laboratory, 310 Cedar St.
15. Lauder Hall
16. Laboratory for Surgery, Obstetrics and Gynecology
17. Primary Care Center
18. Farnam Memorial Building
19. Tompkins East
20. Tompkins Memorial Pavilion
21. Charles A. Dana Building, 789 Howard Ave.
22. Clinic Building
23. Fitkin Memorial Pavilion
24. Fitkin Amphitheater
25. Laboratory for Medicine and Pediatrics
26. Lippard Laboratory of Clinical Investigation
27. Magnetic Resonance Center; Positron Emission Tomography Center
28. John B. Pierce Laboratory, 290 Congress Ave.
29. Yale Psychiatric Institute-Congress Place, 301 Cedar St. The Yale Medical Bookstore, 320 Congress Ave.
30. Yale-New Haven Psychiatric Hospital 2, 184 Liberty St.
31. Yale-New Haven Psychiatric Hospital 3, 184 Liberty St.
32. The Anlyan Center for Medical Research and Education, 300 Cedar St.
33. 430 and 464 Congress Ave. and 726 Howard Ave.
34. **Howard Ave. Garage**
35. Yale Physicians Building, 800 Howard Ave.
36. 110 Davenport Ave. (YNHH Day Care Center)
37. 132–138 Davenport Ave. (Lead Program)
38. Edward S. Harkness Memorial Hall, 367 Cedar St.
39. Neison and Irving Harris Building, Child Study Center, 230 S. Frontage Rd.
40. East Pavilion, 20 York St. (Yale-New Haven Hospital Main Entrance)
41. South Pavilion, 20 York St.
42. **Emergency Services Parking**
43. **Children's Hospital Parking Garage**
44. Children's Hospital (West Pavilion)
45. Grace Building, 25 Park St.
46. Connecticut Mental Health Center
47. Ronald McDonald House, 501 George St.
48. 425 George St.
49. **Air Rights Parking Garage**
50. 127, 135, and 153 College St.
51. New Haven Hotel, 229 George St.
52. **Temple Garage**
53. Temple Medical Center, 40–60 Temple St.
54. College Plaza, 47 College St.
55. Medical Center South, 100 Church St. South (Yale School of Nursing)
56. Amistad Street Building, 10 Amistad St.
57. **Amistad Street Garage**
58. 270 Congress Ave.
59. 300 George St.
60. 2 Church St. South

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Academic and Grading Calendars

ACADEMIC CALENDAR

Fall Term 2005

Aug. 29	Mon.	Orientation for incoming students begins, 9 A.M.
Aug. 30	Tues.	Orientation ends.
Aug. 31	Wed.	Fall-term classes begin.
Aug. 31–Sept. 14		Two-week course “shopping period.”
Sept. 5	Mon.	Labor Day. Classes meet.
Sept. 14	Wed.	Course registration deadline (late fee \$50).
Oct. 14	Fri.	Last day to withdraw from a fall-term course without the course appearing on the transcript.
Nov. 18	Fri.	Fall recess begins, 6 P.M.
Nov. 28	Mon.	Classes resume, 8:30 A.M.
Dec. 2	Fri.	Last day to withdraw from a fall-term course.
Dec. 5–9		Reading period.*
Dec. 12–16		Final examination week.

Spring Term 2006

Jan. 9	Mon.	Spring-term classes begin.
Jan. 9–23		Two-week course “shopping period.”
Jan. 16	Mon.	Martin Luther King, Jr. Day. Classes do not meet.
Jan. 23	Mon.	Course registration deadline (late fee \$50).
Mar. 3	Fri.	Last day to withdraw from a spring-term course without the course appearing on the transcript.
Mar. 3	Fri.	Spring recess begins, 6 P.M.
Mar. 20	Mon.	Classes resume, 8:30 A.M.
Apr. 21	Fri.	Last day to withdraw from a spring-term course.
Apr. 24–28		Reading period.*
May 1–5		Final examination week.
May 22	Mon.	University Commencement.

GRADING CALENDAR 2005–2006

Jan. 3	Tues.	Grades are due for all students.
May 1	Mon.	Final Thesis grades are due to registrar.
May 15	Mon.	Bound copies of Thesis are due to registrar.
May 15	Mon.	Grades are due for all graduating students.
May 25	Thurs.	Grades are due for all continuing students.

*Some classes may meet during reading period.

The President and Fellows of Yale University

President

Richard Charles Levin, B.A., B.LITT., PH.D.

Fellows

Her Excellency the Governor of Connecticut, *ex officio*.

His Honor the Lieutenant Governor of Connecticut, *ex officio*.

George Leonard Baker, Jr., B.A., M.B.A., *Palo Alto, California*.

Edward Perry Bass, B.S., *Fort Worth, Texas*.

Roland Whitney Betts, B.A., J.D., *New York, New York*.

Gerhard Casper, LL.M., PH.D., LL.D., *Atherton, California*.

Susan Crown, B.A., M.A., *Chicago, Illinois*.

Charles Daniel Ellis, B.A., M.B.A., PH.D., *New Haven, Connecticut*.

Jeffrey Powell Koplun, B.A., M.D., M.P.H., *Atlanta, Georgia (June 2009)*.

Maya Ying Lin, B.A., M.ARCH., D.F.A., *New York, New York (June 2008)*.

Margaret Hilary Marshall, B.A., M.ED., J.D., *Cambridge, Massachusetts (June 2010)*.

William Irwin Miller, B.A., M.B.A., *Columbus, Indiana (June 2011)*.

Indra Nooyi, B.S., M.B.A., M.P.P.M., *Greenwich, Connecticut*.

Barrington Daniel Parker, Jr., B.A., LL.B., *Stamford, Connecticut*.

Theodore Ping Shen, B.A., M.B.A., *Brooklyn Heights, New York (June 2007)*.

Janet Louise Yellen, B.A., PH.D., *Berkeley, California (June 2006)*.

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Vice President and General Counsel

Dorothy Kathryn Robinson, B.A., J.D.

Vice President and Director of New Haven and State Affairs

Bruce Donald Alexander, B.A., J.D.

Vice President for Finance and Administration

John Ennis Pepper, Jr., B.A., M.A.

Vice President for Development

Ingeborg Theresia Reichenbach, STAATSEXAMEN

Epidemiology and Public Health Administration and Faculty

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Anne F. Pistell, M.A., M.B.A., *Associate Dean, Student Affairs*

Nancy H. Ruddle, PH.D., *Director of Graduate Studies, Interim Vice Chair/Interim Deputy Dean*

Robert Dubrow, M.D., PH.D., *Director of Medical Studies*

Elizabeth Claus, M.D., PH.D., *Director of Medical Research*

Elaine R. Anderson, M.P.H., *Director of Alumni and Community Affairs and Special Projects*

Matthew Wilcox, M.L.S., *Librarian and Director of Academic Technology*

Susan V. Whalen, B.A., *Director of Student Affairs*

Jacqui R. Comshaw, M.P.A., *Director of Admissions*

Christina Marks, M.B.A., *Director of Career Services.*

Heidi Richard, B.S., *Executive Assistant to the Dean*

Karen Wellman, B.A., *Director of Financial Aid*

FACULTY

Biostatistics

Elizabeth B. Claus, M.D., PH.D., *Associate Professor*

Birol Emir, PH.D., *Assistant Professor (Adjunct)*

Ralitzia Gueorguieva, PH.D., *Assistant Professor*

Pamela Hartigan, M.P.H., PH.D., *Associate Professor (Adjunct)*

Theodore R. Holford, PH.D., *Professor*

Haiqun Lin, M.D., PH.D., *Associate Professor*

Robert W. Makuch, PH.D., *Professor*

Annette M. Molinaro, PH.D., *Assistant Professor*

¹Prakash M. Nadkarni, M.D., *Associate Professor*

Peter N. Peduzzi, PH.D., *Professor (Adjunct)*

Ning Sun, PH.D., *Associate Research Scientist*

Colin White, M.B.B.S., *Professor Emeritus*

Daniel Zelterman, PH.D., *Professor*

Heping Zhang, PH.D., *Professor*

†Hongyu Zhao, PH.D., *Associate Professor*

Chronic Disease Epidemiology

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Marianne Berwick, PH.D., *Research Affiliate*

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Jennifer P. Stuber, PH.D., *Lecturer*
Dorothea M. G. Wild, M.P.H., M.D., *Research Affiliate*
Joseph A. Zaccagnino, M.P.H., *Lecturer*

Public Health Practice

David L. Katz, M.P.H., M.D., *Associate Professor (Adjunct)*
Matthew F. Lopez, Jr., M.P.H., *Lecturer*
Linda G. Marc, M.P.H., SC.D., *Lecturer*
Gary S. Moore, M.S., DR.P.H., *Associate Clinical Professor*
Patti R. Rose, M.P.H., D.E.L., *Lecturer*

* On leave of absence fall 2005.

† On leave of absence spring 2006.

‡ On leave of absence 2005–2006.

§ Faculty affiliated with the Program in Social and Behavioral Sciences.

^a Primary appointment in Child Study Center.

^b Primary appointment in Neurology.

^c Primary appointment in Psychology.

^d Primary appointment in Internal Medicine.

^e Primary appointment in Nursing.

^f Primary appointment in Surgery.

^g Primary appointment in School of Forestry & Environmental Studies.

^h Primary appointment in Pediatrics.

ⁱ Primary appointment in Psychiatry.

^j Primary appointment in School of Management.

^k Primary appointment in Ecology and Evolutionary Biology.

^l Primary appointment in Anesthesiology.

Faculty Profiles

Brian P. Leaderer, Susan Dwight Bliss Professor of Public Health and Interim Dean/Chair of Public Health. Professor Leaderer's research activities focus on developing tools and methods for assessing human exposures to air contaminants, and assessing the impact of health and comfort resulting from those exposures. His research involves both controlled human studies conducted in environmental chambers and epidemiologic studies. Professor Leaderer's chamber-based research includes characterizing air emissions from important indoor sources (environmental tobacco smoke [ETS], kerosene space heaters, building materials and building furnishings), developing inexpensive passive monitors for monitoring concentrations of indoor air contaminants (i.e., ETS and nitrous acid), and assessing the odor and irritation of emissions of volatile organic compounds from building furnishings. Professor Leaderer's air pollution epidemiologic research studies include assessing the impact of particle and vapor phase acids on the respiratory health of infants and their mothers; determining the impact of ETS exposure on pregnancy outcome; assessing the impact of environmental agents (residential aeroallergens, suspended particles, ozone, etc.) on the development and severity of asthma in children; investigating the nature and causes of the building-related occupancy complaint syndrome (BROCS); and a study of the impact of unvented wood burning for cooking on the birthweights of infants and incidence of childhood pneumonia in the Mam Indians in Quetzaltenango in the highlands of Guatemala. Professor Leaderer is co-director of the Yale Center for Perinatal, Pediatric, and Environmental Epidemiology. Ph.D. Yale University.

Nancy H. Ruddle, John Rodman Paul Professor of Epidemiology and Public Health, Division of Epidemiology of Microbial Diseases, Director of Graduate Studies, and Interim Vice Chair/Deputy Dean. Professor Ruddle's laboratory is interested in several aspects of protein products of thymus-derived lymphocytes, particularly cytokines of the tumor necrosis factor (TNF) family, their regulation and roles in lymphoid development and pathogenesis of viral and autoimmune disease. Her laboratory has studied the regulation, mechanism of action, and biological role of a family of lymphokines called lymphotoxin (LT, $LT\alpha$, TNF- β), LT- β and tumor necrosis factor (TNF- α). They have studied molecular regulation of LT, LT- β , and TNF- α production and identified negative and positive elements in the genes and flanking DNAs and evaluated different mechanisms of post-transcriptional regulation of these genes. They are studying the role of LT, LT- β , and TNF- α in pathogenesis of inflammation in diabetes, multiple sclerosis, and HTLV-1 hypercalcemia and have developed transgenic mouse models to study their activities in these diseases. Ph.D. Yale University.

Serap Aksoy, Professor and Head, Division of Epidemiology of Microbial Diseases. A major goal of Professor Aksoy's research is to understand the molecular mechanisms that enable tsetse to transmit trypanosomes, in particular insect midgut and salivary gland

gene products that may allow the parasites to differentiate and establish. Ph.D. Columbia University.

Louis Alexander, Assistant Professor, Division of Epidemiology of Microbial Diseases. Professor Alexander's primary research interest is in discovering determinants of progression to AIDS in HIV-1 infected individuals. These determinants include both the pediatric and adult setting. This work has revealed that both pediatric and adult long-term nonprogressors harbor HIV-1 with unusual polymorphisms in viral specific genes that affect HIV-1 replication and likely contribute to their nonprogressive status. Studies of the effects of these polymorphisms on gene function, viral replication, and pathogenesis include utilization of the simian immunodeficiency virus (SIV) rhesus macaque model and should provide insight in mechanisms of HIV-1 biology that can be utilized in the development of antiviral agents. Ph.D. State University of New York at Stony Brook.

Colleen L. Barry, Assistant Professor, Division of Health Policy and Administration. Professor Barry's current research interests include government regulation of health insurance markets, policy approaches to improving the quality of mental health care, and the politics of health reform. In recent work she studied health plan responses to mental health and substance abuse parity regulation in the federal employees health insurance program. In other research Professor Barry has examined trends in the design and organization of mental health insurance using national employer survey data, and the effects of state parity laws on out-of-pocket spending and use of mental health services. In current research, she is evaluating strategies to overcome economic and institutional barriers to quality improvement for depression care in historically fragmented public sector programs. Ph.D. Harvard University.

Michael B. Bracken, Susan Dwight Bliss Professor of Public Health, Division of Chronic Disease Epidemiology. Professor Bracken's primary research interest is in the area of the epidemiology of diseases of pregnancy and newborns with an emphasis on environmental risk factors for causation and iatrogenic factors in patient care. Professor Bracken is co-director of the Yale Center for Perinatal, Pediatric, and Environmental Epidemiology. He has been the recipient of numerous grant awards and has published over two hundred papers and two books: *Perinatal Epidemiology* (1984) and *Effective Care of the Newborn Infant* (with J. C. Sinclair, 1992). Ph.D. Yale University.

Elizabeth H. Bradley, Associate Professor and Director, Health Management Program, Division of Health Policy and Administration. Professor Bradley's research interests include quality of care for the elderly, including long-term care and end-of-life care. This work involves investigating best practices for improving adherence to clinical guidelines and the implementation and management of innovations in clinical care in the acute care setting. Ph.D. Yale University.

Susan H. Busch, Assistant Professor, Division of Health Policy and Administration and Acting Director, Health Management Program. Professor Busch conducts health ser-

vices research on the treatment of depression and managed care. She has extensive training in management and economics. Ph.D. Harvard University.

Elizabeth B. Claus, Associate Professor and Director of Medical Research, Division of Biostatistics. Dr. Claus's work has focused on (1) cancer and genetic epidemiology, with an emphasis on breast cancer, and (2) the development and implementation of statistical models of cancer risk. She has recently completed a state-wide population-based case/control study of breast carcinoma in situ. This is the largest prospective study of its type and will be used to define genetic and epidemiologic risk factors for the disease. Over the next five years, Dr. Claus will follow this group of women in an effort to define factors that predict medical and quality-of-life outcomes for women diagnosed with breast carcinoma in situ. In addition to her work in breast cancer, Dr. Claus's research interests include the study of neurosurgical outcomes, particularly for pediatric patients. M.D., Ph.D. Yale University.

Loretta DiPietro, Associate Professor, Division of Environmental Health Sciences. Professor DiPietro's research interests are in the area of behavioral factors associated with patterns of successful aging. Specifically, her interests have focused on physical activity patterns, abdominal adiposity, and their independent relationships with both lipid and glucose metabolism in older adults. Professor DiPietro currently directs a randomized, controlled exercise training study in older people, which will assess the impact of higher- and moderate-intensity exercise training on a number of metabolic outcomes. Ph.D. Yale University.

Arthur B. DuBois, Professor, Division of Environmental Health Sciences. Dr. DuBois's research activities concern nitric oxide emanating from the lungs and nasal cavity in humans and in animals. One object is to find out whether inflammation of the lungs produces more nitric oxide, and whether that gas can be used as a measure of the amount of lung irritation during health surveys. Another object is to determine why nitric oxide concentrations in the human nose can be a thousand times as great as those in the air expired from the lungs of the same person. Dr. DuBois's recent interests have concerned mechanisms by which inhaled dust particles initiate bronchoconstriction and immune responses in the lung alveoli. His summer research has included brain tissue hypoxia as it affects the blood pressure of bluefish. Past studies have been on body fluid redistribution in gravity and under weightless conditions. Previously, his primary research was on pulmonary physiology and lung function in normal people and in people with respiratory insufficiency. M.D. Cornell University.

Robert Dubrow, Associate Clinical Professor, Division of Chronic Disease Epidemiology and Director of Medical Studies. Professor Dubrow's primary research interests historically have been occupational epidemiology and cancer epidemiology and prevention. He has published on colorectal cancer, stomach cancer, esophageal cancer, breast cancer, prostate cancer, endometrial cancer, malignant melanoma, and osteosarcoma. He is currently developing new research in disease prevention in conjunction with his work with

the Center for Interdisciplinary Research on AIDS and with the Yale-Griffin Prevention Research Center. M.D., Ph.D. University of Pennsylvania.

Andrew J. Epstein, Assistant Professor, Division of Health Policy and Administration. Professor Epstein is a health care economist with a primary research focus on provider behavior and quality improvement, and additional interest in the economics of the pharmaceutical industry. He has recently studied responses to cardiac surgery mortality report cards, the association between provider volume and patient outcomes, determinants of C-section use, and the effectiveness of pharmaceutical mergers. Ph.D. University of Pennsylvania.

Durland Fish, Professor, Division of Epidemiology of Microbial Diseases. Professor Fish's research interests are in the areas of ecology and prevention of vector-borne infectious diseases. Recent emphasis has been on tick-borne pathogens causing Lyme disease and human ehrlichiosis in the northeastern United States. Current projects include natural and artificial regulation of vector populations, vector competence for viral and bacterial pathogens, co-infection and transmissions of multiple pathogens, geographic and spatial analysis of epidemiological data, and use of satellite imagery to predict vector-borne disease risk. Ph.D. University of Florida.

Alison P. Galvani, Assistant Professor, Division of Epidemiology of Microbial Diseases. Professor Galvani is focusing her research on theoretical modeling of the evolution and epidemiology of infectious diseases. She is particularly interested in evaluating both the short-term and long-term repercussions of different public health policies on the prevalence and intensity of disease, including emerging diseases. Ph.D. Oxford University.

Nora E. Groce, Associate Professor, Division of Global Health. Professor Groce, a medical anthropologist, is interested in the interrelation between formal and traditional medical systems, particularly as they relate to accessibility of care for vulnerable populations. Her ongoing research focuses on three areas: disability cross-culturally, the delivery of health care to ethnic and minority populations within larger nation states, and violence in society. She is currently working on projects that relate to cross-cultural health beliefs and practices, issues of urban health, and disability in the United States and the developing world. Ph.D. Brown University.

Ralitza V. Gueorguieva, Assistant Professor, Division of Biostatistics. Professor Gueorguieva's research interests are in methodological development and applications of mixed effects models for the analysis of longitudinal data. Her main projects include development of models for repeatedly measured discrete and continuous outcomes, and incorporation of modern statistical methods in the design and analysis of clinical trials in psychiatry. Ph.D. University of Florida.

Kari Hartwig, Assistant Clinical Professor, Division of Global Health. Professor Hartwig's research is in the area of HIV/AIDS prevention strategies in East Africa and Southeast Asia, with a particular focus on areas of gender relations, structural factors, and

the role of culture and local context. Most of her research employs qualitative methods based in a constructivist paradigm. In addition, she participates in a number of U.S.-based research initiatives that include Type-2 diabetes prevention and amelioration among African Americans and other community-based research aimed at reducing health disparities in U.S. populations. Dr.P.H. University of North Carolina.

Robert Heimer, Associate Professor, Division of Epidemiology of Microbial Diseases. Professor Heimer's major research efforts include scientific evaluation of HIV prevention programs for drug injectors, virological assessment of the risk of drug injection behaviors, and analysis of the interrelationship between hepatitis virus infections and injection drug use. Ph.D. Yale University.

Josephine Hoh, Associate Professor, Division of Chronic Disease Epidemiology. Professor Hoh's current research focuses on developing analytical methods in mapping genetic origins and assessing environmental risks in human diseases and complex traits, and functional genomic and evolutionary studies of p53 responsive genes. Ph.D. Rutgers University.

Theodore R. Holford, Susan Dwight Bliss Professor of Public Health and Head, Division of Biostatistics. Professor Holford's primary research interests are in the development and application of statistical methods in public health and medicine. One topic he has especially focused on recently has been how trends in cancer epidemiology are described, especially through the use of age-period-cohort models. The development and application of statistical models that incorporate the underlying biology motivate other aspects of his research as well. His collaboration with the National Acute Spinal Cord Injury Study has led to the development of new ways of analyzing data collected from clinical trials of patients who have this type of injury. These methods enable investigators to better understand the effect of improvements in overall neurological function by separating the components due to the level on the spinal cord that is injured and the severity of that injury. Ph.D. Yale University.

Karen S. Hudmon, Assistant Professor, Division of Chronic Disease Epidemiology. Professor Hudmon's research and clinical expertise focus on (1) the treatment of tobacco use and dependence through expansion of the clinician's role in cessation; (2) the study of predictors of smoking among adolescents and young adults; (3) understanding the role of genetics in the development and maintenance of tobacco use and dependence; (4) medication compliance; and (5) poison control. She has co-coordinated an effort to develop, implement, evaluate, and disseminate *Rx for Change: Clinician-Assisted Tobacco Cessation*, a comprehensive tobacco cessation training program for students in the health professions. Dr.P.H., University of Texas.

Jeannette R. Ickovics, Associate Professor and Director, Social and Behavioral Sciences Program, Division of Chronic Disease Epidemiology. Professor Ickovics's research has been directed toward a series of community-based, longitudinal studies in the realm of HIV/AIDS. Ongoing studies include identifying factors that influence recruitment,

adherence, and retention in AIDS clinical trials; evaluating the behavioral and psychological consequences of HIV counseling and testing for pregnant women; and documenting the associations between adolescent pregnancy and risk for sexually transmitted diseases and HIV. In addition, Professor Ickovics is developing and implementing a new line of research to examine how psychosocial, behavioral, and biomedical factors interact to influence the trajectories of recovery following various health events (e.g., myocardial infarction, stroke, surgical recovery). Ph.D. George Washington University.

Melinda L. Irwin, Assistant Professor, Division of Chronic Disease Epidemiology. Professor Irwin's primary research interests are in the area of physical activity and cancer prevention and prognosis. She is trained in exercise physiology, epidemiology, and clinical trials. Specifically, Professor Irwin's research involves the exercise effect on breast cancer biomarkers among high-risk individuals and cancer survivors. Other ongoing research includes determinants of exercise adherence and physical activity methodology. Ph.D. University of South Carolina.

Beth A. Jones, Associate Professor, Division of Chronic Disease Epidemiology. Professor Jones's research is in the area of race differences in the incidence, morbidity, and mortality of cancer, particularly breast cancer. In addition to studying the role of tumor characteristics and genetic alterations in breast cancer survival, she is currently researching the impact of social class, access to health care, and psychosocial variables on stage at diagnosis and survival. Other ongoing research includes breast cancer screening, particularly as it affects African American women. Ph.D. Yale University.

Stanislav V. Kasl, Professor and Head, Division of Chronic Disease Epidemiology. Professor Kasl's primary research interest is in psychosocial epidemiology, the study of social and psychological risk factors for physical illness. Studies include incidence of disease, course of illness and disability, and case fatality. His secondary research interest is in psychiatric epidemiology, the study of risk factors for psychiatric outcomes, and aspects of mental health and well-being. Current studies include the role of job design factors in cumulative trauma disorders; vulnerability to post-traumatic stress disorder among Vietnam veterans; predictors of disability and survival among community elderly; race differences in quality of mammography screening; and health effects of marital closeness in elderly couples. Ph.D. University of Michigan.

Patricia S. Keenan, Assistant Professor, Division of Health Policy and Administration. Professor Keenan draws on political and economic perspectives in her research on Medicare regulation, aging policy, health insurance markets, and health care spending. Her main projects assess important factors in Medicare coverage decisions, health habit changes, and health insurance coverage trends. Ph.D. Harvard University.

Trace Kershaw, Assistant Professor, Division of Chronic Disease Epidemiology. Professor Kershaw's research is in the area of HIV/STD prevention and reproductive and maternal-child health epidemiology. Specifically, Professor Kershaw is interested in

integrating HIV/STD and unwanted pregnancy prevention with prenatal and postnatal care for young high-risk women and their male partners. He is currently involved in several research projects assessing the influence of behavioral interventions aimed to reduce the occurrence of HIV/STD and negative perinatal and postnatal outcomes (e.g., low birth weight, maternal mortality) for young pregnant women in the United States and abroad (e.g., South Africa, Haiti). Ph.D. Wayne State University.

Kaveh Khoshnood, Assistant Professor, Division of Epidemiology of Microbial Diseases. Professor Khoshnood is involved in several studies of HIV infection and health service utilization among drug users. His other areas of research interest are program evaluation, drug policy reform, and the linkage between health and human rights. Ph.D. Yale University.

Becca R. Levy, Associate Professor, Division of Chronic Disease Epidemiology. Professor Levy's research explores psychosocial influences on aging. Her studies focus on how these influences, particularly older individuals' perceptions of aging, affect cognition and health in old age. She studies this by examining: (1) how the aging process differs among cultures that vary in their stereotypes of aging; and (2) how a psychosocial intervention, designed to trigger either positive or negative perceptions of aging, influences a variety of outcomes in older individuals including memory, physical performance, and cardiovascular response to stress. In addition, Professor Levy examines how psychosocial factors influence recovery and survival in old age. Ph.D. Harvard University.

Judith H. Lichtman, Assistant Professor, Division of Chronic Disease Epidemiology. Professor Lichtman's research covers a broad range of cardiovascular diseases including myocardial infarction, stroke, and congestive heart failure. In addition to studying clinical factors associated with disease prevention, she has been interested in the development of risk stratification scales to identify individuals at greatest risk for recurrent vascular events. A specific focus of her research has been the overlap between vascular diseases, such as the risk of stroke following myocardial infarction. Her current research includes the development of a longitudinal, patient-linked Medicare database to examine clinical aspects of cardiovascular, peripheral vascular, and cerebrovascular disease in the elderly. This work will examine the rates and trends of vascular disease over time, the utilization of vascular procedures, and short- and long-term vascular outcomes including mortality and recurrent illness. An important component of this research will be to determine how rates and outcomes vary by age, race, gender, and geographic location. Ph.D. Yale University.

Haiqun Lin, Associate Professor, Division of Biostatistics. Dr. Lin's primary research interests concern the development, implementation, and application of statistical methods in longitudinal biomarkers for disease processes. Her research activity has been directed toward characterizing the joint responses of the longitudinal PSA readings and prostate cancer incidence utilizing mixture models. She had been trained in medicine and molecular and cellular biology prior to a formal education in statistics. M.D. Beijing Medical University; Ph.D. Cornell University.

Xiaomei Ma, Assistant Professor, Division of Chronic Disease Epidemiology. Professor Ma's research interest is in the etiology of chronic non-infectious diseases, particularly cancer. She has been studying the role of immunologic factors and environmental chemical exposures in the etiology of childhood leukemia for the last few years. She is also interested in molecular classification and genetic susceptibility of the disease. Other ongoing research includes methodological issues in selection of control subjects in case control studies, and DNA methylation in leukemia cases. Ph.D. University of California, Berkeley.

Robert W. Makuch, Professor, Division of Biostatistics. Professor Makuch's primary research interests involve methodologic issues in the design, conduct, and analysis of clinical studies. In particular, he is interested in the appropriate design and analysis of active control equivalence studies, and he has described how controls should be selected, how the sample size for these studies is determined, and what constitutes appropriate methods of analysis. Interim analysis in general, and the development and application of conditional power methodology in particular, is another active research area. These methods have been used in numerous settings, including a multicenter, Yale-based study for the identification of a new therapy for the treatment of intraventricular hemorrhage. Analytic areas of interest include prospective individual matching designs and methods for the analysis of longitudinal data. These methodological developments have been directed primarily in the area of cancer and HIV. Ph.D. Yale University.

Lawrence E. Marks, Professor, Division of Environmental Health Sciences. Professor Marks's research interests focus on the development of quantitative psychophysical models to account for human sensory and perceptual responses to various environmental stimuli including noise and light vibration. A second aspect of Professor Marks's research is concerned with the relation between the perceptual coding of sensory information and the subsequent recoding of this information through language; current studies seek to disentangle sensory contributions and linguistic contributions to interactions between stimuli activating different sense modalities. A third aspect of Professor Marks's work centers on interactions between attention and perception; this research examines the ways that the detection and perception of environmental stimuli depend on how attention is directed to particular subsets of stimuli; the underlying hypothesis is that attention represents the selective facilitation or suppression by the central nervous system of information arising on distinct subsets of peripheral nerve fibers. Ph.D. Harvard University.

Susan Taylor Mayne, Professor, Division of Chronic Disease Epidemiology. Professor Mayne's primary research interests are in the area of nutrition and cancer prevention. She is trained in nutritional biochemistry, epidemiology, and clinical trials, and recently completed a large cancer prevention clinical trial to determine whether supplemental beta-carotene reduces the incidence of second cancers in patients treated curatively for early-stage cancers of the oral cavity, pharynx, and larynx. In addition to

this trial, Professor Mayne directed a study of occupational factors and head and neck cancer risk, is collaborating with other Yale faculty on an etiologic study of adenocarcinoma of the esophagus and gastric cardia, and on a study of pesticides and PCBs and risk of female breast cancer. In addition, her nutrition laboratory provides analytical support for other nutrition-related research projects. Professor Mayne is also an associate director of the Yale Cancer Center, for which she leads the Cancer Prevention and Control Research Program. Ph.D. Cornell University.

Diane McMahon-Pratt, Professor, Division of Epidemiology of Microbial Diseases, and Director of Post-Doctoral Affairs. The focus of the research in Professor McMahon-Pratt's laboratory is the genus of parasitic protozoan, *Leishmania*, which causes a spectrum of diseases known as leishmaniasis. Using biochemical and molecular genetic approaches, the laboratory is involved in the study of molecules that are developmentally regulated by the parasite during its life cycle; these molecules should provide clues as to how the parasite survives and/or manipulates its environment within either the insect vector or mammalian host. She is also interested in understanding and elucidating the immune effector mechanisms involved in the control of infection by the mammalian host. Ph.D. Harvard University.

Michael H. Merson, Anna M. R. Lauder Professor of Public Health, Division of Global Health. Between 1978 and 1995 Dr. Merson served consecutively as director of three international health programs in the World Health Organization dealing with diarrheal diseases, acute respiratory infections, and AIDS. His previous research, which resulted in over one hundred publications, related to the epidemiology of infectious diseases in developing countries. His current major policy interests include HIV/AIDS prevention, including evaluation of structural interventions in underserved populations in the United States and abroad. He currently serves as director of the Center for Interdisciplinary Research on AIDS (CIRA), which supports prevention research and studies of related policy issues, and as director of CIRA's International Research Core, which provides collaborative international HIV prevention research and training activities. M.D. State University of New York, Health Sciences Center, Brooklyn.

Annette Molinaro, Assistant Professor, Division of Biostatistics. Professor Molinaro's research has focused on prediction of survival outcomes with large data sets as frequently encountered in genomics. These projects have revolved around epidemiologic and genetic associations in primary occurrence and recurrences in breast, ovarian, and cervical cancer. Ph.D. University of California, Berkeley.

Linda M. Niccolai, Assistant Professor, Division of Epidemiology of Microbial Diseases. Professor Niccolai's primary research interest is in behavioral aspects of HIV and STD prevention. Specifically she is interested in studying individual- and partnership-level determinants of sexual risk behaviors, particularly among underserved populations. Other ongoing research activities include studies of woman's reproductive health (including pregnant women) and HIV/STD prevention. Ph.D. Tulane University.

A. David Paltiel, Associate Professor and Head, Division of Health Policy and Administration. Professor Paltiel is engaged in numerous research projects concerned broadly with issues of resource allocation and decision making in the health sector. His work focuses on the development of methods and models for the economic evaluation of a variety of pharmaceutical products, medical technologies, and public health activities. He has published on such subjects as the costs and consequences of antiretroviral therapy, the economics of HIV and cancer screening, the theoretical foundations of cost-effectiveness analysis for resource allocation, optimal timing and targeting policies for AIDS prevention and treatment policies, and the cost-effectiveness of preventing AIDS complications. Ph.D. Yale University.

Curtis L. Patton, Professor, Division of Epidemiology of Microbial Diseases. Professor Patton's research interests include identification and characterization of trypanosome specific calmodulin response elements, as well as studies of structure and biological function of trypanosome calmodulin. Under physiological conditions, treatment with methylating agents induces synchronous differentiation in these parasites. In his research Professor Patton is characterizing carboxyl methyltransferases and methyl-esterases and determining the role of S-adenosyl-methionine and decarboxylated S-adenosylmethionine in alpha-difluoromethylornithine-induced differentiation. Ph.D. Michigan State University.

Melinda M. Pettigrew, Assistant Professor, Division of Epidemiology of Microbial Diseases. Professor Pettigrew uses a combined molecular and epidemiologic approach to understand infectious diseases in infants and young children. Her main projects involve the identification of bacterial factors important for the pathogenesis of pneumococcal infections and an analysis of the impact of environmental exposures on otitis media. Ph.D. Yale University.

Harvey A. Risch, Professor, Division of Chronic Disease Epidemiology. Dr. Risch's research interests are in the areas of cancer etiology and prevention, and in epidemiology methods. He is especially interested in the effects of reproductive factors, diet, genetic predisposition, and histopathologic factors in the causation of ovarian neoplasms. His major research projects have included studies of lung cancer, ovarian cancer, bladder cancer, esophageal and stomach cancer, and cancers related to the use of oral contraceptives and noncontraceptive estrogens. M.D. University of California, San Diego; Ph.D. University of Chicago.

Jennifer Prabh Ruger, Assistant Professor, Division of Global Health. Professor Ruger's research interests are in the areas of economic evaluation of addiction programs; health, health systems, and development; and health and social justice. She is especially interested in the cost-effectiveness of smoking cessation and HIV-prevention programs among low-income populations and in the political economy of health and health policy in developed and developing countries. Her major research includes a K award from the National Institute of Drug Addiction on economic evaluation of addiction services and a

global health equity project examining the implications of Amartya Sen's capability approach for equity and efficiency in health and health systems in developed and developing countries. Ph.D. Harvard University, M.Sc. Oxford University.

Mark J. Schlesinger, Professor, Division of Health Policy and Administration. Professor Schlesinger's health policy research includes assessments of federal programs for children and the elderly; studies of the growth of for-profit enterprises in health and mental health care; investigations of the scope and consequences of various forms of "managed care" and utilization management, including their application to "managed competition"; and analyses of public attitudes toward health care reform. His research on other aspects of social policy includes studies of government contracting for services from private agencies; public perceptions and attitudes shaping intergenerational tensions and age-targeted social programs; and the comparative performance of private nonprofit, for-profit, and public agencies. Ph.D. University of Wisconsin.

Jody L. Sindelar, Professor, Division of Health Policy and Administration. Professor Sindelar's research activities apply economic principles to health issues. Her current major research interests focus on economic issues of alcoholism and substance abuse, including lost productivity, cost-effective treatment, and drunk driving. Another area of research is illicit drug policy. Professor Sindelar has a career development award to support research on alcoholism from NIAAA. Other interests include gender differences in the use of medical care, antitrust issues, physician reimbursement, economic aspects of clinical trials, and financial issues in health care. Professor Sindelar is also a research associate at the National Bureau of Economic Research. Ph.D. Stanford University.

Nina S. Stachenfeld, Associate Professor, Division of Environmental Health Sciences. Professor Stachenfeld examines environmental influences on body water regulation. Her primary work is in the area of estrogen and progesterone effects on body water and sodium regulation. She is currently using a protocol that includes temporary suppression of the human menstrual cycle in young women. Adding back controlled levels of estrogen or progesterone or both hormones simultaneously then follows this suppression. This protocol is designed to isolate the effects of these hormones on the systems that regulate body water, including renal water and sodium regulation, trans-capillary fluid dynamics, and thirst sensation. Ph.D. Columbia University.

Christian Tschudi, Associate Professor, Division of Epidemiology of Microbial Diseases. Professor Tschudi's studies focus on the biology of trypanosomes, the causative agent of devastating diseases in Africa and South America. His major projects involve the identification of genes important for the infectious cycle of the parasite and an understanding of gene silencing by RNA interference in African trypanosomes. Ph.D. University of Basel, Switzerland.

Hong Wang, Assistant Professor, Division of Global Health. Professor Wang's research interests are in the areas of health system reform, health care financing, and the determinants of population health in developing countries. He is currently researching the

impact of socio-economic factors on Chinese health-related quality of life and health service utilization. He is also working on the issue of valuation of health impact of air pollution. M.D. Beijing Medical University, Ph.D. University of Wisconsin.

Derek Yach, Professor and Head, Division of Global Health. Professor Yach implemented several epidemiological and policy related research projects and programs in priority public health areas in South Africa and internationally. For ten years he worked at WHO, being responsible for a “renewed” Health for All (HFA) policy, adopted by the World Health Assembly in May 1998; development of WHO’s first international treaty, the Framework Convention on Tobacco Control (FCTC); and more recently, the Global Strategy for diet, physical activity, and health. His major research interests are chronic disease prevention and control and the politics of global health. M.B.Ch.B. University of Cape Town, M.P.H. Johns Hopkins.

Herbert Yu, Assistant Professor, Division of Chronic Disease Epidemiology. Professor Yu’s research is in the field of molecular epidemiology with focus on elucidating cancer etiology and identifying tumor markers for cancer management. His current research projects include studying gene-environmental interaction in the etiology of breast and endometrial cancers with emphasis on the interplay between genetic polymorphisms and lifestyle features; examining the impact of aging on epigenetic regulation of cancer-related genes and its association with prostate cancer risk; and assessing molecular and genetic markers for the prognosis of ovarian and breast cancers. M.D. Shanghai Medical University, Ph.D. University of Toronto.

Daniel Zelterman, Professor, Division of Biostatistics. Professor Zelterman’s research interests are centered in applied statistics. Before coming to Yale in 1995, he studied the limits of human longevity and models related to other extreme value models. He is currently doing research on clinical trials at the Yale Cancer Center. This research covers survival analysis, modeling of cancer mechanisms, and discrete distributions. His interests in cancer epidemiology and genetics have brought him to examine the analysis of pedigrees, familial clusters of disease, and similar computationally intensive statistical methods. Ph.D. Yale University.

Heping Zhang, Professor, Division of Biostatistics. Professor Zhang’s research interests are in the general area of regression analysis: theory, methodology, and applications. Recently, he has been developing and implementing a nonparametric tree-based method that allows one to analyze data with multidimensional responses and with continuous and/or categorical covariates. This tree-based method is especially suitable for risk factor analyses of large, complex epidemiologic studies. Professor Zhang is also interested in statistical genetics and neuroimaging analyses. Ph.D. Stanford University.

Yawei Zhang, Assistant Professor, Division of Environmental Health Science. Professor Zhang’s research interests are in the areas of cancer epidemiology and etiology. She is especially interested in the effects of environmental factors, endogenous and exogenous

hormones, genetic susceptibility, and gene-environmental interactions on human cancer risk. Her main research projects involve environmental factors, genetic susceptibility, and non-Hodgkin's lymphoma; gene-environmental interactions and breast cancer risk; early life exposures and breast and testicular cancer risk. M.D. West China University of Medical Science, China; Ph.D. Yale University.

Hongyu Zhao, Ira V. Hiscock Associate Professor of Public Health, Division of Biostatistics. Professor Zhao's research interests focus on applications of probability and statistics to molecular biology and genetics. The projects he is currently working on include (1) statistical analysis of linkage disequilibrium; (2) analyzing the patterns of familial transmission of substance abuse and comorbid disorders from family studies; (3) statistical analysis of time trends of cancer incidence and mortality; (4) multilocus analyses of single spore, half-tetrad, and tetrad data using models that incorporate both chromatid interference and chiasma interference; (5) modeling gene conversion; (6) cost-effective designs on mapping quantitative trait loci using sib pairs and other relative sets; and (7) mapping quantitative trait loci of experimental organisms. Ph.D. University of California, Berkeley.

Liangbiao Zheng, Associate Professor, Division of Epidemiology of Microbial Diseases. Professor Zheng's laboratory is studying interactions between mosquitoes and malaria parasites. One area of research is the application of molecular/quantitative genetic and genomic approaches in identifying in the mosquito key genetic loci that are involved in killing malaria parasites. Another area of Professor Zheng's research is to examine the functions of mosquito proteins belonging to Toll/Interleukin-1 receptor family in innate immunity and parasite recognition. Ph.D. Harvard University.

Tongzhang Zheng, Professor and Head, Division of Environmental Health Sciences. Professor Zheng's research interests have been in the area of cancer epidemiology and environmental epidemiology. He is the principal investigator for a number of ongoing case-control studies, including a case-control study of GST genetic polymorphisms and environmental factors and risk of female breast cancer; a case-control study of non-Hodgkin's lymphoma; a case-control study of viral and environmental etiology of Hodgkin's disease; a case-control study of multiple myeloma in Connecticut; and a case-control study of cancers of the stomach and esophagus in China. He is also the principal investigator for a case-control study of indoor air pollution and asthma among school-children in Beijing. Sc.D. Harvard University.

Yong Zhu, Assistant Professor, Division of Environmental Health Sciences. Dr. Zhu's research interests focus on using a molecular epidemiological approach to study genetic susceptibility markers and their interactions with environmental exposure in human disease development. He has been developing and validating novel phenotypic and genotypic assays and biomarkers for several smoking-related cancers. By utilizing various techniques in molecular biology, molecular cytogenetics, cell biology, and computational

biology, he identifies biomarkers that can characterize inherited genetic predisposition and cellular response to environmental factors. In addition, Dr. Zhu is interested in applying evolutionary concepts and tools in biomarker study and medical research. He is currently using phylogenetic analysis to screen biomarkers for molecular epidemiological study and addressing the role of gene-environment interaction in human disease in the context of human evolutionary history. Ph.D. Rice University.

History of the Department of Epidemiology and Public Health

The Department of Epidemiology and Public Health at Yale is one of thirty-one nationally accredited schools of public health in the country, and is also one of the oldest. In 1914 Yale University received an endowment from the Anna M. R. Lauder family to establish a chair in public health in the School of Medicine. This chair was filled in 1915 by Charles-Edward Amory Winslow, who was to be a central figure in the development of public health at Yale.

In the early years, Winslow focused on “the education of undergraduate medical students along the lines of preventive medicine.” He also established a one-year program leading to a Certificate in Public Health. From the beginning, Winslow sought to build bridges between the Department of Public Health, the Scientific School, and the Graduate School by making courses available to students in the other schools. He was also able to establish Bacteriology, Pathology, and Public Health as a single, unified department in the Graduate School.

Winslow looked to a number of existing departments (Bacteriology, Immunology, Medicine, Pathology, Pediatrics, Physiological Chemistry, Sanitary Engineering, and Zoology) to supplement his own courses in public health principles, public health administration, and vital statistics. He established a comprehensive nonmedical program that graduated eighteen students with a Certificate in Public Health, ten with a Ph.D., and four with a Dr.P.H. by 1925. His students specialized in administration, bacteriology, or statistics.

In 1920 Winslow set forth a definition of public health:

Public health is the science and the art of preventing disease, prolonging life and promoting physical health and efficiency through organized community efforts for the sanitation of the environment, the control of community infections, the education of the individual in principles and personal hygiene, the organization of medical and nursing services for the early diagnosis and preventive treatment of disease, and the development of the social machinery which will ensure to every individual a standard of living adequate for the maintenance of health; organizing these benefits in such a fashion as to enable every citizen to realize his birthright of health and longevity.

In the early 1920s Winslow’s department was a catalyst for public health reform in Connecticut, and the health surveys prepared by him and his faculty and students led to considerable improvements in public health organization. He also successfully campaigned to improve health laws in Connecticut and for the passage of a bill that created the State Department of Public Health.

During Winslow’s thirty years at Yale, hygiene developed into preventive medicine; bacteriology evolved into microbiology to include parasitology and virology; classic

epidemiology evolved into clinical epidemiology; control of communicable diseases became chronic disease control; and public health assimilated the social dimensions of sickness and health and appropriated such disciplines as medical economics and medical care organization.

In the early 1960s it was decided to merge the Department of Public Health with the Section of Epidemiology and Preventive Medicine, a unit within the Department of Internal Medicine. The Department of Epidemiology and Public Health was the result of this merger. In 1964 the new department moved into its own building, the Laboratory of Epidemiology and Public Health, which was designed by Philip Johnson and continues as the primary location of the department.

Degree Programs

MASTER OF PUBLIC HEALTH DEGREE (M.P.H.)

Yale's M.P.H. program is designed for highly motivated students with related work experience or a professional degree as well as a substantial interest in an area of public health. A unique sequencing of courses, community-based programmatic activities, and field or laboratory research provides students with multiple opportunities to define their specialty and to tailor their course of study.

Individualized programs are shaped through frequent interactions with faculty through courses, field experiences, and the thesis. An important component of the M.P.H. program is the faculty-student relationship, institutionalized in the form of an advisory system. Students are expected to work with their adviser in selecting appropriate courses, deciding on their internship and thesis, and integrating learning from all their experiences.

All students focus their studies in one of eight academic programs – Biostatistics, Chronic Disease Epidemiology, Social and Behavioral Sciences, Environmental Health Sciences, Epidemiology of Microbial Diseases, Global Health, Health Policy, and Health Management. Students apply to one of the specific divisions but are urged to develop programs of study that include courses from other divisions within EPH and throughout the University. Students in all divisions benefit from the strengths of Yale's professional and graduate schools and learn ways to understand the complexity and multidimensionality of most public health issues.

The majority of M.P.H. students are registered for full-time study and spend two years in residence completing the requirements for the M.P.H. degree. Students in the M.P.H. program are required to complete 20 course units, which include the core curriculum, divisional requirements, and electives both within EPH and in other schools at the University. Course units are not given for seminars and colloquia.

Full-time students must carry a minimum of 4 course units per term for four terms and must complete all course requirements (including the thesis) within five years of matriculation.

Students may elect to take more than the minimum number of course units needed to graduate; however, no student may shorten the four-term program by accumulating course units sufficient to graduate at the end of three terms. **Full-time students must carry a minimum of 4 course units in their final term.**

Part-time student status is granted to those students taking fewer than 4 course units per term. Part-time students are encouraged to take at least 2 course units per term and must complete all course requirements (including the thesis) within five years of matriculation. Those considering part-time study should be aware that there are no courses offered during the evening, on weekends, or during the summer months.

First-year students in the M.P.H. program may apply to another professional or graduate program within Yale for a joint-degree program. If admitted, students must notify

the associate dean for student affairs. Joint-degree students must fulfill all degree requirements for both programs.

Core Curriculum for the M.P.H. Degree

<i>Course Number</i>	<i>Course Title</i>	<i>Course Units</i>
BIS 505a and b	Introduction to Statistical Thinking I & II	1 each term
CDE/EMD 508a	Principles of Epidemiology I	1
<i>One of the following:</i>		
CDE 505a	Social and Behavioral Influences on Health	1
CDE 571b	Psychosocial and Behavioral Epidemiology	1
<i>One of the following:</i>		
EHS 503b	Introduction to Toxicology	1
EHS 510b	Fundamentals of Environmental Health and Risk Assessment	1
EHS 511a	Applied Risk Assessment I	1
<i>One of the following:</i>		
HPA 510a	Health Policy and Health Systems	1
HPA 560a	Health Care Finance and Delivery	1

Additional M.P.H. Degree Requirements

Internship. The Internship is a degree requirement that is completed in the summer between the first and second academic years. Students work with their faculty advisers and the Office of Career Services to identify suitable placements, which include medical care facilities, community agencies, research projects, laboratories, and other sites engaged in public health activities. The Internship experience often serves as a basis for the M.P.H. thesis. The Internship is displayed on the transcript with a grade of “S” (Satisfactory) upon completion. **Students in the 15-course shortened program and joint-degree students are not required to complete an Internship.**

Thesis. The thesis (2 course units) is typically a yearlong project that is completed in the second academic year and is the culmination of the student’s educational experience at EPH. It is frequently a report of a small research project performed independently by the student. Students work with faculty advisers in designing their project and in writing the thesis. Detailed guidelines for the thesis are outlined in Appendix I. **The thesis is not a requirement for students in the Health Management or Health Policy program.**

Learning Objectives of the Core Curriculum

Upon completing the core curriculum of the M.P.H. program, the student will be able to:

- Demonstrate a knowledge base in the disciplines of biostatistics, chronic and infectious disease epidemiology, health systems, public policy, social and behavioral sciences, and environmental health.

- Apply basic research skills to specific public health problems in both group and individual settings including the ability to define problems; construct, articulate, and test hypotheses; draw conclusions; and communicate findings to a variety of audiences.
- Understand the interrelationships among a multitude of factors which can impact on a public health problem, specifically scientific, medical, environmental, cultural, social, behavioral, economic, political, and ethical issues.
- Demonstrate the ability to use public health skills in the context of actual public health problems experienced in the community or work environment, through application of concepts, principles, and methodologies obtained through formal course work.
- Critically evaluate programs, interventions, and outcomes which relate to public health practice.
- Demonstrate a knowledge of ethical standards and professional values as they relate to the practice of public health, and a sensitivity to the social context within which public health professionals practice.

M.P.H. Divisional Programs

BIostatistics

Theodore Holford, Ph.D.

Division Head

Biostatistics is one of the skills necessary for the development and practice of public health because health-related research and resultant policy decisions often have a quantitative foundation. Biostatistical methods and knowledge are essential for the following: (a) valid and efficient study designs, (b) data collection so that study objectives can be realized, and (c) data analysis so that valid conclusions can be drawn from a study's results. These methods can be appropriate for quantifying the possible effect of risk factors and health interventions on individual subjects, as well as groups of people. Hence, the sound practice of biostatistics has a substantial impact on all aspects of research in the health sciences.

Divisional Requirements for the M.P.H. Degree in Biostatistics

<i>Course Number</i>	<i>Course Title</i>	<i>Course Units</i>
BIS 525a and b	Seminar in Biostatistics	0
BIS 540a	Fundamentals of Clinical Trials	1
BIS 623a	Applied Regression Analysis	1
BIS 625a	Categorical Data Analysis	1
BIS 635b	Topics in Statistical Epidemiology	1
*STAT 541a	Probability Theory	1
*STAT 542b	Theory of Statistics	1

* These courses are offered in the Graduate School of Arts and Sciences.

One of the following:

BIS 628b	Longitudinal Data Analysis	1
BIS 637b	Stochastic Processes in Biology and Medicine	1
BIS 643b	Theory of Survival Analysis and Its Applications	1
BIS 646a	Nonparametric Statistical Methods and Their Applications	1
BIS 691b	Theory of Generalized Linear Models	1

Biostatistics Learning Objectives

Upon receiving an M.P.H. degree with a concentration in Biostatistics, the student will be able to:

- Develop an efficient design for recording and storing data collected in research projects associated with health sciences.
- Design efficient computer programs for study management using SAS or other programming languages.
- Produce edited data sets suitable for statistical analysis.
- Perform analyses of stated hypotheses using a variety of analytical tools, including analysis of variance, multiple regression, nonparametric statistics, logistic regression, multivariate analysis, and methods for analyzing rates and failure time data.
- Make relevant inferences from data.
- Produce working tables and statistical summaries describing research in health sciences.
- Communicate the results of research studies in public health with managers in associated subject-matter fields.

CHRONIC DISEASE EPIDEMIOLOGY

Stanislav V. Kasl, Ph.D.

Division Head

Epidemiology is the study of the frequency, distribution, and causes of disease in human populations. In Chronic Disease Epidemiology (CDE), the laboratories are the city block or town, the state or country, the housing project, the newborn nursery or nursing home, and the senior center or hospital.

CDE students will learn how to define, collect, and analyze data from and improve the health of communities. The CDE curriculum emphasizes critical thinking and the application of that facility to the literature and to the development of research protocols and to the conduct and analysis of epidemiologic investigations. The principal research instrument of the chronic disease epidemiologist is often the questionnaire. The development of valid, reliable, and unambiguous questionnaires is a skill taught to all CDE students. Increasingly, epidemiologists also make use of genetic and biologic markers to indicate exposure to potentially damaging agents or as signs for the early onset of disease. Students learn the role of these innovative advances throughout the program.

Students learn about the role of epidemiology in a broad range of public health and medical arenas, including the fields of aging, cancer, cardiovascular disease, perinatal and reproductive epidemiology, and psychosocial epidemiology, all areas in which the division has particular strength. Among the resources available to students are the Yale Cancer Center, the Connecticut Tumor Registry (the oldest of its kind in the world), the Center for Perinatal, Pediatric, and Environmental Epidemiology, and the Yale Center on Aging. M.P.H. graduates of the CDE program find employment in academic institutions; in public health agencies at the national, state, and local level; in divisions of preventable or chronic diseases; in health surveillance; and in applied research. Voluntary agencies such as cancer or heart associations recruit graduates to participate in or direct community programs.

Graduates also obtain intermediate-level research positions in such federal agencies as the National Institutes of Health. Private industries, including the pharmaceutical industry, find the quantitative skills of CDE graduates useful in monitoring drug safety and in clinical research. Many CDE graduates subsequently pursue doctoral degrees in public health or other professional or academic fields.

Divisional Requirements for the M.P.H. Degree in Chronic Disease Epidemiology

<i>Course Number</i>	<i>Course Title</i>	<i>Course Units</i>
CDE 516b	Principles of Epidemiology II	1
CDE 517a	Developing a Research Protocol	1
CDE 521b	The Epidemiology of Selected Chronic Diseases	1
CDE 523b	Measurement Issues in Chronic Disease Epidemiology	1
CDE 534b	Approaches to Data Management and Analysis of Epidemiologic Data	1
BIS 623a	Applied Regression Analysis	1
<i>or</i>		
BIS 625a	Categorical Data Analysis	1

Students are advised to take two of the following courses:

CDE 518b	Introduction to Pharmacoepidemiology	1
CDE 530a	Molecular Epidemiology of Chronic Disease	1
CDE 531a	Health and Aging	1
CDE 532b	Epidemiology of Cancer	1
CDE 533b	Topics in Perinatal Epidemiology	1
CDE 535b	Vascular Epidemiology	1
CDE 550a	Introduction to Evidence-Based Health Care	1
CDE 562a	Nutrition and Chronic Disease	1

Chronic Disease Epidemiology Learning Objectives

Upon receiving an M.P.H. degree with a concentration in Chronic Disease Epidemiology, the student will be able to:

- Evaluate the scientific merit and feasibility of epidemiologic study designs.
- Describe the epidemiology of common chronic diseases.
- Synthesize information from a variety of epidemiologic and related studies.
- Design and carry out epidemiologic studies with minimal supervision.
- Analyze data from epidemiologic studies at an intermediate level.
- Present their research to colleagues.
- Describe basic pathophysiologic mechanisms and/or psychopathologic mechanisms.
- Identify and use routinely collected data on disease occurrence.
- Review critically articles from the epidemiologic research.

SOCIAL AND BEHAVIORAL SCIENCES PROGRAM (SBS)

Jeannette Ickovics, Ph.D.

Director

Becca Levy

Acting Director, spring 2006

The CDE division offers a program that enables students to receive specialized training in Social and Behavioral Sciences (SBS). The overall purpose of this program is to provide instruction in the theory and methods of the social and behavioral sciences that emphasize the behavioral, psychological, and social influences on health, illness, and recovery. The primary emphases are (1) to understand how behavioral, psychological, and social influences interact with biological factors to affect health, and (2) to evaluate and develop strategies to promote health and prevent disease by altering adverse life styles and psychosocial risk factors at the level of the individual, primary social groups and communities.

The SBS curriculum is unique in that it combines courses in social and behavioral sciences and epidemiology. Students in the SBS program will share a core of courses with other CDE students in epidemiologic methods and biostatistics. Students specializing in SBS will be required to take three additional courses: (1) an overview course of observational evidence from psychosocial and behavioral epidemiology, describing the social and psychological influences on health from the individual, the community, and the societal perspectives; (2) a course on methods and strategies of health promotion and disease prevention, which translates the observational evidence into effective methods of reducing risk of disease; (3) a course dealing with theories and methods from psychology and sociology that apply to the conceptualization and measurement of relevant psychosocial influences on health. Elective courses, such as those on religion and health, on health disparities, and on methods in psychiatric epidemiology, are also offered.

Divisional Requirements for the M.P.H. Degree in Social and Behavioral Sciences

<i>Course Number</i>	<i>Course Title</i>	<i>Course Units</i>
CDE 505a	Social and Behavioral Influences on Health	1
CDE 516b	Principles of Epidemiology II	1
CDE 523b	Measurement Issues in Chronic Disease Epidemiology	1
CDE 534b	Approaches to Data Management and Analysis of Epidemiologic Data	1
CDE 571b	Psychosocial and Behavioral Epidemiology	1
CDE 572a	Preventive Interventions: Theory, Methods, and Evaluation	1
CDE 574b	Developing a Health Promotion and Disease Prevention Intervention	1
<i>Students are advised to take two of the following courses:</i>		
CDE 517a	Developing a Research Protocol	1
CDE 521b	The Epidemiology of Selected Chronic Diseases	1
CDE 531a	Health and Aging	1
CDE 545b	Health Disparities by Race and Sex: Epidemiology and Intervention	1
CDE 570a	Epidemiology of Psychiatric Disorders	1
CDE 575b	Religion, Health, and Society	1
CDE 576a	Social Psychological Theories of Health	1
CDE 578b	Applied Research Methods in the Social and Behavioral Sciences	1

Social and Behavioral Sciences Learning Objectives

The primary learning objective is to understand the role that social, psychological, and behavioral factors play as determinants and consequences of illness and health. Specifically, upon completion of the M.P.H. program, all students will demonstrate competency in their ability to:

- Apply basic theory and methods to interpret scientific findings in the social and behavioral sciences.
- Identify the effects of social, psychological, and behavioral factors on individual and population risk for disease.
- Describe the key social, psychological, and behavioral predictors of health, and delineate the impact of these factors on morbidity and mortality, including the treatment and management of chronic disease, adjustment to illness, adherence to treatment regimens, promotion of recovery, and prevention of recurrence.
- Demonstrate an understanding of the interplay between social, psychological, and behavioral factors and genetic, biological, and environmental determinants of health.

- Describe how social, psychological, and behavioral factors are targeted in prevention programs, and how to apply behavioral theory in the design, implementation, and evaluation of prevention interventions aimed toward: (a) decreasing health damaging behaviors (e.g., risky sex, tobacco use); (b) increasing health promoting behaviors (e.g., exercise, cancer screening); and (c) increasing psychosocial well-being (e.g., coping with chronic illness) — at both the individual and community levels.

ENVIRONMENTAL HEALTH SCIENCES

Tongzhang Zheng, Sc.D.

Division Head

In the course of their daily activities individuals spend time in a variety of spaces (i.e., residences, industrial and nonindustrial workplaces, automobiles, outdoors), and are engaged in a number of activities (i.e., work, eating, drinking, hobbies), which can result in exposure to a wide range of biological, chemical, and physical environmental stressors. Exposures to these stressors are associated with a number of health and comfort effects.

The division of Environmental Health Sciences (EHS) seeks to produce M.P.H. graduates who are able to recognize and assess the impact of environmental health hazards on human health in the community and occupational setting and to identify a range of options available to reduce exposures to those hazards.

Students in EHS can choose tracks in environmental epidemiology, environmental policy, or risk assessment. Within these tracks there is flexibility for students to design with their adviser a program to meet individual needs. Students take advantage of the wide variety of courses relevant to environmental health offered by the division, the department, and throughout the University, particularly those in the School of Forestry & Environmental Studies.

M.P.H. graduates of the EHS program find employment in public agencies at the community, city, state, and federal levels; in pharmaceutical companies in areas such as risk assessment and occupational health and safety; in environmental consulting organizations; and in private sector companies in the area of corporate health and safety. They also take research positions in organizations including the National Institutes of Health, the Centers for Disease Control, and the Environmental Protection Agency.

Divisional Requirements for the M.P.H. Degree in Environmental Health Sciences

<i>Course Number</i>	<i>Course Title</i>	<i>Course Units</i>
EHS 502a	Physiology for Environmental Health Sciences	1
EHS 503b	Introduction to Toxicology	1
EHS 508a	Assessing Exposures to Environmental Stressors	1
EHS 514a	Environmental Chemistry	1
EHS 525a and b	Seminar in Environmental Health	0

EHS students have the option of adding one of the following tracks:

Environmental Epidemiology Track

EHS/CDE 516b	Principles of Epidemiology II	1
EHS 507a	Environmental Epidemiology	1

Environmental Risk Assessment Track

EHS 507a	Environmental Epidemiology	1
EHS 511a	Applied Risk Assessment I	1

Environmental Health Policy Track

*F&ES 725b	Science and Politics of Environmental Regulation	1
*F&ES 864a or b/ LAW 20014	Environmental Protection Clinic	1

Environmental Health Sciences Learning Objectives

Upon receiving an M.P.H. degree with a concentration in Environmental Health Sciences, the student will be able to:

- Understand the basic principles of how contaminants are introduced into the air, water, soil, and food and then transported through the environment.
- Recognize the biological, chemical, and physical stressors and evaluate the potential hazard to human health and comfort in the working, residential, and community environments.
- Use toxicological, statistical, epidemiological, and exposure assessment techniques in assessing the risks associated with environmental hazards.
- Recognize the process by which policies are developed to regulate environmental hazards.
- Understand the basic principles used to manage risks associated with exposure to environmental hazards.

EPIDEMIOLOGY OF MICROBIAL DISEASES

Serap Aksoy, Ph.D.

Division Head

Microbial disease epidemiology is the science of the cause, distribution, frequency of, and resistance to infections caused by viruses, parasites, and bacteria, and of the distribution, transmission, and control of these agents.

The M.P.H. curriculum for the division of Epidemiology of Microbial Diseases (EMD) is designed to train the student to understand the epidemiology of the major infectious agents, the diseases they cause, and the host response to those diseases. The interaction of the agent (parasite, bacterium, or virus) with the host and the influence of the environment on both agent and host are studied. The curriculum considers the role of age, immunological response, genetics, natural history of vectors, geographical distribution, and transmission and transport of agents. In addition to epidemiology courses, the division's faculty teach microbiology courses relating to bacteria, viruses,

* These courses are offered in the School of Forestry & Environmental Studies.

and parasites, including classification, replication, biochemistry, genetics, immunology, and pathogenesis – essential to the understanding of the epidemiology of microbial disease. Through these experiences the student gains a clear understanding of the quantitative and qualitative biological spectrum of microbial diseases.

Using a problem-solving approach the student learns about surveillance through collection and analysis of data followed by synthesis of information as a basis for public health decisions. The same approach is used to investigate epidemics and to study basic biologic problems.

Emphasis is placed on the application of epidemiological concepts to intervention in transmission cycles and disease progression. Intervention may be accomplished through such measures as vaccination, antimicrobial therapy, vector control, or behavior modification. The student is encouraged to obtain a solid laboratory foundation for diagnosis, for population-based serologic surveys, and for understanding the molecular basis of the disease process and intervention strategies. Third World infectious disease problems and their solutions are considered extensively.

Nearly half of EMD graduates in the M.P.H. program enter administrative/epidemiological control units at the local, state, or national level, and a portion of the remainder enter hospital, medical center, or industrial programs. Many students continue graduate and professional education beyond the M.P.H. degree.

Divisional Requirements for the M.P.H. Degree in Epidemiology of Microbial Diseases

First-year EMD students only

<i>Course Number</i>	<i>Course Title</i>	<i>Course Units</i>
EMD 512a	Immunology for Epidemiologists	1
EMD 525a	Seminar in Epidemiology of Microbial Diseases	0
EMD 541b	Infectious Diseases: Epidemiology, Prevention, and Control	1
EMD 542b	Biology of Infectious Agents	1

Students must take at least three courses from the following EMD electives:

EMD 520a	HIV-1/AIDS: Biology and Intervention	1
EMD 530b	Hospital Epidemiology	1
EMD 536b	Investigation of Disease Outbreaks	1
EMD 557b	Public Health Issues in HIV/AIDS	1
EMD 560b	Epidemiologic Methods in STD/HIV Research	1
EMD 650b	Biology of Disease Vectors	1
EMD 664b	Biology of Eukaryotic Parasites	1
BIS 511a	GIS Applications in Epidemiology and Public Health	1
CDE 516b	Principles of Epidemiology II	1

Highly Recommended Courses

CDE 516b	Principles of Epidemiology II	1
CDE 534b	Approaches to Data Management	1
EMD 548a	Remote Sensing: Observing the Earth from Space	1

Additional EMD Courses

EMD 545b	Biosafety and Biohazard Evaluation	1
EMD 633a	Lab and Field Studies in Infectious Diseases	1
EMD 642a	Roles of Microorganisms in the Living World	1

Second-year EMD students only

<i>Course Number</i>	<i>Course Title</i>	<i>Course Units</i>
EMD 525a	Seminar in Epidemiology of Microbial Diseases	n/a
EMD 541b	Infectious Diseases: Epidemiology, Prevention, and Control	1

Students must choose at least three courses from List A and two courses from List B. Additional EMD courses may be taken as electives.

List A

EMD 512a	Immunology for Epidemiologists	1
EMD 516a	Biology of Viruses of Humans	1
EMD 520a	HIV-1/AIDS: Biology and Intervention	1
EMD 650b	Biology of Disease Vectors	1
EMD 664b	Biology of Eukaryotic Parasites	1

List B

EMD 530b	Hospital Epidemiology	1
EMD 536b	Investigation of Disease Outbreaks	1
EMD 545b	Biosafety and Biohazard Evaluation	1

Either

EMD 548a	Remote Sensing: Observing the Earth from Space	1
<i>or</i>		
BIS 511a	GIS Applications in Epidemiology and Public Health	
EMD 557b	Public Health Issues in HIV/AIDS	1
EMD 560b	Epidemiologic Methods in STD/HIV Research	1
CDE 516b	Principles of Epidemiology II	1

Epidemiology of Microbial Diseases Learning Objectives

Upon receiving an M.P.H. degree with a concentration in the Epidemiology of Microbial Diseases, the student will be able to:

- Understand the causes, detection, transport, transmission, and pathogenesis of infectious diseases and apply the methods of epidemiology to problems of disease prevention and control.
- Understand the available solutions and approaches for the control of important infectious diseases globally, integrate the epidemiology of specific diseases with research methodology, and appreciate the challenges in their effective control.
- Understand the immunological basis of vaccination and how the use of vaccines allows for the effective control of infectious diseases in the United States and abroad.

- Apply his/her knowledge to studies planned for prevention and control of these infections.
- Intervene in transmission cycles and disease progression by: (a) conducting surveillance through collection, analysis, and synthesis of data; (b) participating in the investigation of an epidemic; and (c) carrying out population-based surveys using laboratory methods to diagnose infectious diseases and molecular technology to track spread of an infection.
- Understand how to modify human behavior in order to control and prevent infectious diseases.
- Investigate the interaction of infectious agents with vertebrate hosts and the environment and develop models to predict the spread of an infection.
- Understand the quantitative and qualitative biological spectrum of infectious diseases.

GLOBAL HEALTH

Derek Yach, M.B.Ch.B.

Division Head

The Global Health Division prepares students for a career in international health in a rapidly changing economic, social, and political environment. It addresses the interdependent nature of health and the globalization of disease within the context of social development. It allows students to study the organization of international health and the global forces that influence its dynamics, and to compare responses and solutions in different parts of the developing and the developed world. Global health builds on a wide range of disciplines – the social, environmental, and biological sciences, demography, law, and the policy sciences – all of which contribute knowledge and strategies to improve the health of populations. The division introduces students to a skill set that includes resource-based community development and organization, investment-oriented strategic health planning and evaluation, and partnership and alliance building.

In addition to offering a set of core courses and electives, the Global Health Division encourages students to take courses in all divisions of EPH as well as other professional schools and graduate programs throughout the University, including the Economic Growth Center, Forestry & Environmental Studies, International Relations, Law, and Management. The division exposes students to international public health practice by bringing leading experts in health from around the world to campus during the year to participate in formal and informal teaching, discussion, and research.

The curriculum allows students to develop their areas of interest while building skills in public health practice, program development, and policy analysis. Specific in-depth studies are pursued according to the career plans of individual students, i.e., human rights, public-private partnerships, global health policy, and international health promotion.

A summer internship is required, and in recent years students have interned with organizations such as the World Health Organization, UNICEF, the Population Council, Human Rights Watch, and some forty other nongovernmental and international

organizations. Graduates have found positions around the world in international health, development, and advocacy organizations, in both the public and the private sector, and with a variety of charitable and faith-based organizations and foundations.

Divisional Requirements for the M.P.H. Degree in Global Health

First-year GHD students only

<i>Course Number</i>	<i>Course Title</i>	<i>Course Units</i>
GHD 525a and b	International Public Health Practice Seminar	0
GHD 551a	Introduction to Global Health	1
GHD 585b	Comparative Health Care Systems	1
GHD 586a	Global Health and Human Rights	1
GHD 595b	Economic, Social, and Political Dimensions of Development	1

Students are required to take a minimum of two GHD electives:

GHD 541a	Community Health Program Evaluation	1
GHD 542b	Community Health Program Planning	1
GHD 543a	Gender, Health, and Globalization	1
GHD 545a	Global Aspects of Food and Nutrition	1
GHD 546a	Social Change and Population Health	1
GHD 548b	Global Aspects of Chronic Disease	1
GHD 555b	WHO Framework Convention on Tobacco Control	1
GHD 579a	Cross-Cultural Issues in Health	1
GHD 580b	Qualitative Research Methodology	1
GHD 596b	Critical Policy Issues in the AIDS Pandemic	1

Second-year GHD students only

Divisional Requirements

GHD 513b	Topics in Global Health	1
GHD 525a and b	International Public Health Practice Seminar	n/a
GHD 551a	Introduction to Global Health	1

Students must choose five elective courses from the following list:

GHD 541a	Community Health Program Evaluation	1
GHD 542b	Community Health Program Planning	1
GHD 543a	Gender, Health, and Globalization	1
GHD 545a	Global Aspects of Food and Nutrition	1
GHD 546a	Social Change and Population Health	1
GHD 548b	Global Aspects of Chronic Disease	1
GHD 555b	WHO Framework Convention on Tobacco Control	1
GHD 567a	AIDS, Poverty, and Development in India	1

GHD 579a	Cross-Cultural Issues in Health	1
GHD 580b	Qualitative Research Methodology	1
GHD 585b	Comparative Health Care Systems	1
GHD 586a	Global Health and Human Rights	1
GHD 595b	Economic, Social, and Political Dimensions of Development	1
GHD 596b	Critical Policy Issues in the AIDS Pandemic	1
HPA 529a	Policy Analysis and Health Politics	1

Global Health Learning Objectives

Upon receiving an M.P.H. degree with a concentration in Global Health, the student will be able to:

- Construct and apply an analytic tool to assess health resources capacity.
- Undertake to isolate and weigh (relative) factors and forces in a given situation affecting the health of a given population.
- Apply in a systematic manner the collection and analysis of data appropriate to achieving a health goal (including delivering requisite resources).
- Apply a standard analytic tool to perform a comparison of health systems including economic, organizational, managerial, and health outcome measures.
- Construct a health gains “map”; isolate appropriate interventions (policy adjustments) which meet given standards of acceptability, ethics, feasibility, etc.; and mediate and/or negotiate in the policy shift process.
- Describe and critically assess the infrastructure of the global health enterprise, e.g., players, strategies, agency interfacing, and effectiveness.

HEALTH POLICY AND ADMINISTRATION

A. David Paltiel, Ph.D.

Division Head

The goal of the division of Health Policy and Administration (HPA) is to address the critical issues in improving the nation’s public health, especially the health of high risk and vulnerable populations. The Division offers two M.P.H. degree programs: Health Policy and Health Management.

The specific objectives of the M.P.H. program in Health Policy and Administration are: (1) to provide its students with a basic foundation of knowledge in public health, health policy, and health services management, and (2) to teach concepts, principles, and scientific skills necessary for health services management and health services policy development and evaluation. The program aims to have students develop an understanding of the importance of research as a policy and management tool. Students are taught to anticipate future needs relative to expanding technology, changing patterns of community health, and emerging societal and programmatic needs.

The division's program consists of a unique, unified approach to policy and management. It is built on the recognition that issues of health policy cannot be divorced from principles of sound management, nor can health care management or policy be developed without a fundamental understanding of morbidity, mortality, and epidemiologic methods. Further, the division recognizes that leaders cannot make successful decisions about the delivery of health care nor solve the health problems affecting society over the next decades without extensive analytic and decision-making skills. Students need to be able to translate sound scientific evidence into effective health policy. The HPA program emphasizes training in quantitative methods, economics, financing, epidemiology, and evaluative methods for policy and management. Social and behavioral sciences are integral parts of many courses throughout the two-year curriculum.

Students design their own sequence of courses to form a concentration in HPA. Students may emphasize either policy or management, and may also specialize in particular substantive areas (e.g., mental health, family health, health economics, or aging) or receive training at a more advanced level in health policy, administration, or management. Students are required to take an integrative seminar in either health policy or health management.

Given the sequence in the policy courses and the need to complete a rigorous methods course prior to the second year, transfers into the Health Policy program will not be allowed after the first term unless the student has successfully completed Methods in Health Services Research or Principles of Epidemiology II.

Graduates with an emphasis in Health Policy and Administration are employed in both the public and private sectors including federal and state agencies, for-profit and nonprofit health care organizations, hospitals, and private consulting firms, as well as in research.

Divisional Requirements for the M.P.H. Degree in Health Policy and Administration

<i>Course Number</i>	<i>Course Title</i>	<i>Course Units</i>
HPA 510a	Health Policy and Health Systems	1
HPA 514b	Government and Health Policy	1
HPA 529a	Policy Analysis and Health Politics	1
HPA 583b	Methods in Health Services Research	1
HPA 586b	Microeconomics for Health Care Professionals	1
HPA 597b	Capstone Course in Health Policy	1

The thesis is not a requirement in the Health Policy Program.

Health Policy and Administration Learning Objectives

Upon receiving an M.P.H. degree with a concentration in Health Policy and Administration, the student will be able to:

- Identify and assess the major values and institutions that affect health and social policy in the United States.

- Understand the historical origins and evolution of the major public programs and policies affecting the delivery of medical care.
- Describe the legal and ethical bases for public health and health services.
- Demonstrate a comprehensive understanding of the broader social determinants of health and the role of public policy in mediating these influences.
- Develop skills for reshaping the policy agenda on key legislative, regulatory, and financing initiatives.
- Articulate and apply major models of policy analysis to social problems.
- Evaluate public programs and policies, in light of available epidemiological and statistical evidence as well as economic criteria for program effectiveness.
- Craft effectively written policy analysis that compares alternative approaches to dealing with problems and develops a rationale for selecting among alternatives.
- Analyze how organizational behavior, program administration, and other factors affect the implementation of public policy.

HEALTH MANAGEMENT PROGRAM

Elizabeth H. Bradley, Ph.D.

Director, Health Management Program

Susan Busch

Acting Director of Health Management Program

Future health care managers will be involved in a wide range of settings like hospitals, health systems, pharmaceutical and biotechnology companies, health maintenance organizations, managed care companies, insurance companies, and consulting. The Health Management Program was designed with the realization that both management training and public health training are needed to adequately prepare future leaders in health management in the years ahead.

The Health Management Program emphasizes this need for training in both management skills and public health. This track is offered in conjunction with the Yale School of Management (SOM). The management courses at SOM, combined with offerings in HPA in advanced health management and policy, and a capstone course in the second year, give students an excellent foundation for work in the field. Given the sequence of courses at EPH and SOM, students are not allowed to transfer into the Health Management Program after the first two weeks of the first term.

Divisional Requirements for the M.P.H. Degree in Health Management

<i>Course Number</i>	<i>Course Title</i>	<i>Course Units</i>
HPA 510a	Health Policy and Health Systems	1
HPA 518a	Practice Seminar in Health Management	0
HPA 547b	Law and Ethics of Health Care Organizations	1

HPA 561b	Capstone Course in Health Management	1
HPA 583b	Methods in Health Services Research	1
HPA 586b	Microeconomics for Health Care Professionals	1
*MGT 540a	Financial Management (Valuation & Investment) (Half-Term)	1
*MGT 550a	Marketing Management	1
*MGT 571b	Operations Management I	1
*MGT 803b	Leadership (Half-Term)	.5
*MGT 815a	Managerial Controls I (Half-Term)	.5
*MGT 870a	Financial Accounting (Half-Term)	.5
*MGT 886b	Designing and Managing Organizations (Half-Term)	.5

The thesis is not a requirement in the Health Management Program.

Health Management Learning Objectives

Upon receiving an M.P.H. degree with a concentration in Health Management, the student will be able to:

- Identify and assess the factors influencing health care finance and delivery.
- Understand fundamental management skills in the areas of accounting, finance, marketing, operations management, and organizational behavior and apply these skills to address health care management problems.
- Use core public health skills in epidemiology, biostatistics, social and behavioral sciences, environmental health, and health policy to anticipate and address problems and opportunities in the management of health care organizations.
- Understand the legal, ethical, social, and environmental issues affecting the delivery of health services.
- Craft effectively written orally presented analyses of management issues, comparing alternative approaches to management problems and developing a rationale for selecting among the available alternatives.
- Employ the principles of evidence-based management to translate cutting-edge research into practice to improve health care delivery and financing systems.

B.A.-B.S./M.P.H. Degree Program

The Select Program in Public Health gives Yale College students interested in the field of public health the opportunity to earn a bachelor's degree from Yale College and an M.P.H. degree from the Yale School of Medicine Department of Epidemiology and Public Health (EPH) in a five-year joint program. During four years of Yale College enrollment, students will complete a standard Yale College major and six course units applicable toward the M.P.H. Students will complete a public health internship between the fourth and fifth years of the program. They will be at EPH full time in their fifth year,

*These courses are offered in the School of Management.

during which they will complete the master's thesis and their remaining ten courses for the master's degree.

Candidates must present evidence of a commitment to public health, as well as one year of college-level mathematics and either biology, chemistry, or physics. Students may apply to EPH for the joint program in the spring term of their sophomore year. Applicants must complete the standard EPH application forms, and must submit transcripts, SAT scores, three letters of recommendation, and a personal statement.

Financial aid, if provided during the fifth year, will come from EPH.

Further information about this program may be obtained from the Office of Student Affairs, 47 College St., Suite 108, New Haven CT 06510, 203.785.6260, or on the Web at www.publichealth.yale.edu.

MASTER OF SCIENCE IN EPIDEMIOLOGY AND PUBLIC HEALTH (M.S. IN EPH)

The M.S. degree program in Epidemiology and Public Health is designed with an emphasis on mastering the skills in individual specialty areas within public health. The length of study leading to the M.S. degree may be either one or two academic years, and is determined by course requirements necessary for students to acquire a strong grounding in the skills in their chosen area of concentration. Programs are currently offered in Biostatistics and Chronic Disease Epidemiology.

The M.S. in EPH is offered through the department's affiliation with the Graduate School of Arts and Sciences. The departmental Doctoral Committee and the director of graduate studies (DGS) are responsible for overseeing the progress of M.S. students.

Biostatistics Track (BIS)

The M.S. in Biostatistics is a two-year program. It is designed to train students to meet the growing need in managed care organizations, medical research, and the pharmaceutical industry for graduates with technical skills in data analysis. In contrast to the more general M.P.H. degree, the M.S. degree emphasizes the mastery of biostatistical skills from the beginning of the plan of study. While graduates of this program may apply to the Ph.D. degree program, the M.S. degree is itself quite marketable as a terminal degree.

DEGREE REQUIREMENTS

The Biostatistics track requires a minimum of 12 courses plus a Master's Thesis.

CURRICULUM

The following courses are required:

BIS 540a	Fundamentals of Clinical Trials
BIS 623a	Applied Regression Analysis
BIS 625a	Categorical Data Analysis
BIS 635b	Topics in Statistical Epidemiology

†STAT 541a	Probability Theory
†STAT 542b	Theory of Statistics
†STAT 612a	Linear Models

In addition, students must take two elective courses either in Biostatistics theory or Statistics and one elective in Epidemiology and Public Health (not in Biostatistics).

Biostatistics electives are to be selected from Database Management in Medicine and Epidemiology (BIS 560); Topics in Genetic Epidemiology (BIS 631); Theory of Generalized Linear Models (BIS 691); Stochastic Processes in Biology and Medicine (BIS 637); Nonpara-metric Statistical Methods and Their Applications (BIS 646); Theory of Survival Analysis and Its Applications (BIS 643); or other biostatistics courses to be chosen with consent of the degree candidate's adviser.

Students demonstrating a mastery of topics covered by the required courses may replace them with more advanced courses, but must receive written permission from the DGS prior to enrolling in the substitute courses.

MASTER'S THESIS

In the second year of the program, the student is required to execute a program of independent research under the direction of a faculty member. This project usually falls into one of these main areas:

1. Development of a new statistical theory or methodology.
2. A computer-based simulation study to illustrate properties of an existing method.
3. The analysis of a real data set.

The student is required to prepare a written thesis under the supervision of a Biostatistics faculty member. Upon completion of the thesis, the student will make an oral presentation of the results of his/her work.

For specific instructions on the organization, mechanics, and publication of the thesis, see Appendix I: Thesis Guidelines on pages 129–36.

Chronic Disease Epidemiology Track (CDE)

With the growth of biotechnology and medical research in the pharmaceutical industry there is a high demand for well-trained graduates in chronic disease epidemiology. This track provides intensive training in epidemiology and research methods for science Ph.D.s or medical professionals.

DEGREE REQUIREMENTS

The CDE track consists of required and elective course work and the satisfactory completion of the Capstone experience. A total of 10 courses are required. It is expected that this program will be completed during a single academic year. Students with an M.P.H. or other related degrees may be eligible to substitute advanced courses for some of the required courses. Written permission of the DGS is required prior to enrolling in substitute courses.

†These courses are offered in the Graduate School of Arts and Sciences.

CURRICULUM

The following courses are required:

BIS 623a	Applied Regression Analysis
BIS 625a	Categorical Data Analysis
BIS 635b	Topics in Statistical Epidemiology
CDE 508a	Principles of Epidemiology I
CDE 516b	Principles of Epidemiology II
§CDE 517a	Developing a Research Protocol
CDE 523b	Measurement Issues in Chronic Disease Epidemiology

Electives (three courses are required):

BIS 511a	GIS Applications in Epidemiology
BIS 540a	Fundamentals of Clinical Trials
BIS 561b	Advanced Topics and Case Studies in Multicenter Clinical Trials
BIS 631a	Topics in Genetic Epidemiology
BIS 643b	Theory of Survival Analysis and Its Applications
BIS 645a	Statistical Methods in Human Genetics
CDE 518b	Introduction to Pharmacoepidemiology
CDE 530a	Molecular Epidemiology of Chronic Disease
CDE 531a	Health and Aging
CDE 532b	Epidemiology of Cancer
CDE 533b	Topics in Perinatal Epidemiology
CDE 535b	Vascular Epidemiology
CDE 550a	Introduction to Evidence-Based Health Care
CDE 562a	Nutrition and Chronic Disease

DOCTORAL DEGREES (PH.D.)

Doctoral training has been part of Yale's mission since early in its history. The University awarded the first Ph.D. in North America in 1861, and the doctoral program in public health began with the establishment of the department in 1915. Six years later, in 1922, Yale conferred the Doctor of Philosophy (Ph.D.) in Public Health on two candidates.

Public health spans disciplines that use tools available in the laboratory, field research, social sciences, the public policy arena, and mathematics. Students engage in a highly focused area of research reflecting scholarship at the doctoral level but are exposed to a broad view of public health as seen in the diverse research interests of the department's faculty.

§ In this Capstone course, the student is required to complete an NIH-type grant application that is deemed reasonably competitive by the instructor. An optional addition to the capstone experience is an individualized tutorial in which the student completes a manuscript that is suitable for submission for publication in a relevant journal.

The primary mission of the doctoral program in Epidemiology and Public Health is to provide scholars with the disciplinary background and skills required to contribute to the development of our understanding of better ways of measuring, maintaining, and improving the public's health. The core of such training includes the mastery of research tools in the specialty discipline chosen by the candidate.

Within the Yale academic community, the Ph.D. is the highest degree awarded by the University. EPH offers studies toward the Ph.D. degree through its affiliation with the Graduate School of Arts and Sciences. The Graduate School makes the final decision on accepting students into the program, admission to candidacy, and the awarding of the degree.

Academic Advising

Each student is assigned to an academic adviser at the time of matriculation. The academic adviser is available for help with course selection and preparation for the comprehensive examinations. A student must address a request for a change of his/her academic adviser in writing to the director of graduate studies (DGS). The request must be co-signed by the new academic adviser.

Teaching Fellowships

Teaching experience is regarded as an integral part of the graduate training program. Doctoral students are required to complete four terms satisfactorily as a Teaching Fellow (10 hours per week). These teaching experiences are typically completed during the second and third years of study. First-year students are encouraged to focus their efforts on course work and in most instances are not permitted to serve as Teaching Fellows. First-year students may be allowed to serve as Teaching Fellows if they have been awarded advanced standing. Advanced standing is only available to students who have completed previous graduate study at Yale (e.g., M.P.H. program). If a student has been awarded one year of advanced standing, he/she will be allowed to teach in both the fall and spring terms of the first year. If a student has been awarded one term of advanced standing, he/she will only be allowed to teach during the spring term of the first year. Students interested in serving as Teaching Fellows during their first year of doctoral study should submit a petition to the DGS well before the start of the term in which they hope to participate in a course. In some instances, when a student has demonstrated excellent teaching abilities, and with the approval of the DGS, graduate research assistantship opportunities may take the place of teaching in the third year of study. By year four, all students are expected to be engaged in full-time research activities.

Degree Requirements

There are five divisions in EPH in which doctoral students may choose a specialty. Requirements for each division vary and are outlined below under "Divisional Requirements." In addition, all candidates for the Ph.D. degree must conform to the requirements of the Graduate School.

REQUIRED COURSE WORK

The normal requirement for the degree of Doctor of Philosophy is four full years of graduate study. Generally, the first two years are devoted primarily to course work. Each student must satisfactorily complete a minimum of ten courses or their equivalent and must satisfy the individual divisional requirements (see each division for course requirements). The Graduate School requires that Ph.D. students achieve a grade of Honors in at least two doctoral-level courses. All EPH doctoral students are required to participate in an ethics course that exposes students to both practical and theoretical issues in research ethics. This course is generally offered every other year through EPH.

COMPREHENSIVE EXAMINATIONS

The required comprehensive examinations are usually taken at the end of the second year of study. In order to meet the different divisional needs, each division has developed a comprehensive examination format. Details about the comprehensive examination structure are given in each divisional program description below. The comprehensive examinations serve to demonstrate that the candidate has mastered the background and the research tools required for dissertation research. The comprehensive examinations are usually scheduled in June, and all examinations must be scheduled within a two-week period. Students who have not completed the comprehensive examinations with an average grade of High Pass by the end of their second year will not be permitted to register for the third year.

ADMISSION TO CANDIDACY

To be admitted to candidacy, a student must have completed all course work and the honors requirement, must have completed the comprehensive examinations with an average grade of High Pass or better, and must have an approved dissertation prospectus. Students in the Ph.D. program must be admitted to candidacy by the end of the third year of study. Students who have not been admitted to candidacy will not be permitted to register for the fourth year of study.

The Dissertation

DISSERTATION ADVISORY COMMITTEE

Soon after passing the comprehensive examinations and with the assistance of his/her academic adviser, each student requests appropriate faculty members to join a Dissertation Advisory Committee (DAC) to review the dissertation prospectus prepared by the student. The dissertation adviser continues to advise during the course of thesis research. The Dissertation Advisory Committee usually consists of at least three members. Two members are expected to be EPH faculty, and one member may be from another department but is expected to have a faculty appointment in the Graduate School. EPH encourages participation of faculty members from other departments. An additional committee member may be selected from outside the University if he/she is a recognized authority in the area of the dissertation. Documentation (such as a C.V.) must be provided in sup-

port of this additional member. A chairperson (who must have a Graduate School appointment) is designated at the time of the formation of a DAC. The composition of the Dissertation Advisory Committee must be approved by the DGS and the Departmental Doctoral Committee at the time a dissertation prospectus is submitted.

The DAC reviews and approves the prospectus as developed by the student and recommends to the director of graduate studies (DGS) and the departmental doctoral committee that the prospectus be approved. Each DAC is expected to meet at least once each year, and more frequently if necessary. Since dissertation progress reports are due at the close of the spring term, it is advised that the annual meeting be scheduled during this term. The student schedules meetings of the DAC. The chairperson of the DAC produces a summary evaluation of progress and plans for the coming year. This document is to be distributed to each committee member for comments and signature. Each student and the DGS are to receive a copy of the signed document from the DAC chairperson.

After approval of the prospectus the DAC reviews the progress of the dissertation research and the dissertation and decides when it is ready to be submitted to the readers. At that time the chair of the DAC submits its recommendation to the DGS and the Departmental Doctoral Committee, together with the approved dissertation and its recommendation of suitable readers.

READERS OF THE DISSERTATION

At the time of submission of a dissertation, a minimum of three readers are proposed by the student and the DAC. The Departmental Doctoral Committee reviews the proposed readers and approves a final list. For the Ph.D., formal recommendations for readers of each dissertation are made by EPH to the Graduate School. Two of the readers must have Yale Graduate School appointments. One must be an EPH faculty member; other readers may be faculty from outside the department or University. The selection of faculty readers should include at least one senior faculty member. Use of an outside reader is encouraged. All readers must be recognized authorities in the area of the dissertation. A proposal to include a reader from another institution must be accompanied by the curriculum vitae of that individual. Members of the Dissertation Advisory Committee are not eligible to serve as readers. The Graduate School sends a copy of the dissertation and a reader's report form to each reader.

When the completed readers' reports are received by the Graduate School and the department, they are reviewed by the DGS and the Departmental Doctoral Committee prior to making a departmental recommendation to the Graduate School that the degree be awarded. The DAC may be asked to comment on the readers' reports before recommendations are made to the Graduate School.

ORAL PRESENTATION OF THE DOCTORAL DISSERTATION

Doctoral dissertations originating in EPH must be presented in a public seminar. This presentation is scheduled after the submission of the dissertation to the readers and preferably prior to the receipt and consideration of the readers' reports. At least one

member of the DAC supervising the dissertation and at least one member of the departmental Doctoral Committee are expected to attend the presentation.

Divisional Requirements

The specific requirements with regard to courses, comprehensive examinations, and admission to candidacy set by EPH divisions are described below.

BIOSTATISTICS

Biostatistics involves the development and application of sound statistical and mathematical principles to research in the health sciences. Because original theoretical research in biostatistics flows from medical research, it is essential that the foundations of methodological development be firmly grounded in sound principles of statistical inference and a thorough knowledge of the substantive area that provides the source of the medical questions being addressed. Thus, the division of Biostatistics encourages excellent methodological work that is motivated by sound science that includes but is not limited to active collaborations with other investigators.

Research collaborations for biostatisticians take place both within and across divisions in EPH, as well as with other departments in the School of Medicine and the University at large. Areas of current research include development of general methods that have wide applicability across different areas of health research, as well as more specific techniques for dealing with the underlying processes that give rise to the data of interest. A broad range of health topics addressed by students in this division include chronic diseases such as cancer, genetic epidemiology, clinical research, and mathematical models for infectious diseases.

Graduates of the doctoral program in Biostatistics are employed in universities throughout the country, as well as in such dedicated research institutions as the National Institutes of Health. In addition, graduates have pursued careers in the pharmaceutical industry in which they are actively involved in the evaluation of new therapeutic strategies.

Required Course Work

Students in the division of Biostatistics prepare for their comprehensive examination by taking the courses listed below. Course waivers must be recommended by the adviser and approved by the division head and DGS.

Biostatistics

BIS 525a and b	Seminar in Biostatistics
BIS 623a	Applied Regression Analysis
BIS 625a	Categorical Data Analysis
BIS 628b	Longitudinal Data Analysis
BIS 635b	Topics in Statistical Epidemiology
BIS 691b	Theory of Generalized Linear Models

One of the following:

BIS 637b	Stochastic Processes in Biology and Medicine
BIS 643b	Theory of Survival Analysis and Its Applications
BIS 646a	Nonparametric Statistical Methods and Their Applications

Theoretical Statistics

*STAT 541a	Probability Theory
*STAT 542b	Theory of Statistics
*STAT 610a	Statistical Inference
*STAT 612a	Linear Models

Under the guidance of the academic adviser, students choose three courses in their applied area. The applied area consists of an intended area of methodologic research applied to such areas as epidemiology, genetics, microbiology, or health policy. For example, the courses required for students taking an epidemiology examination are: CDE 508a, Principles of Epidemiology I; CDE 516b, Principles of Epidemiology II; and CDE 619a, Advanced Epidemiologic Research Methods.

Comprehensive Examinations

The examination covering epidemiological methods includes both an in-class and a take-home portion. One faculty member is responsible for coordinating this examination, and the examination content is developed by the overall faculty. The specialty area examination is usually prepared in a tutorial with one or more faculty members.

Research Experience

In a number of courses, students gain actual experience with various aspects of research including preparation of a research grant, questionnaire design, preparation of a database for analysis, and analysis and interpretation of real data. In addition, doctoral students can gain research experience by working with faculty members on ongoing research studies prior to initiating dissertation research.

The Dissertation

The division of Biostatistics strives for doctoral dissertations that have a strong methodological component motivated by an important health question. Hence, the dissertation should include a methodological advance or a substantial modification of an existing method motivated by a set of data collected to address an important health question. The dissertation must also include the application of the proposed methodology to real data. A fairly routine application of widely available statistical methodology is not acceptable as a dissertation topic. Candidates are expected not only to show a thorough knowledge of the posed health question, but also to demonstrate quantitative skills necessary for the creation and application of novel statistical tools.

† These courses are offered in the Graduate School of Arts and Sciences.

CHRONIC DISEASE EPIDEMIOLOGY

Epidemiology is the study of disease in populations. Such populations may be groups of people in certain geographic areas, people with a common disease, or people with some suspected risk factor. The division of Chronic Disease Epidemiology (CDE) has traditionally focused on either chronic or noninfectious diseases although in recent years the artificiality of this distinction has become obvious and the view has been broadened. A recent thesis, for example concerned the perinatal transmission of HIV/AIDS, and others have examined the viral etiology of cancer.

The division is perhaps best known for its doctoral programs in the epidemiology of aging, cancer, perinatal diseases, and psychosocial disorders. However, students in the division often work on projects with other divisions within EPH, other departments in the School of Medicine, and other schools within the University. Thus there are numerous opportunities for creating an experientially rich doctoral program.

Graduates from the division's doctoral program are found on the faculties of universities throughout the world, at the highest levels of federal and international research programs, in numerous private and public foundations and institutions, and at many multinational corporations.

Required Course Work

Students in this division are expected to complete the following courses or their equivalents:

BIS 505a	Introduction to Statistical Thinking I
BIS 505b	Introduction to Statistical Thinking II
CDE 508a	Principles of Epidemiology I
CDE 516b	Principles of Epidemiology II
CDE 517a	Developing a Research Protocol
CDE 523b	Measurement Issues in Chronic Disease Epidemiology
CDE 619a	Advanced Epidemiologic Research Methods

Biostatistics

BIS 540a	Fundamentals of Clinical Trials
BIS 623a	Applied Regression Analysis
BIS 625a	Categorical Data Analysis
BIS 635b	Topics in Statistical Epidemiology

General Biology/Epidemiology

CDE 521b	The Epidemiology of Selected Chronic Diseases
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Topic Areas

In order to ensure that students gain a broad knowledge regarding epidemiology, students take a minimum of four topic area courses in addition to those in their specialty area such as:

CDE 518b	Introduction to Pharmacoepidemiology
CDE 530a	Molecular Epidemiology of Chronic Disease
CDE 531a	Health and Aging
CDE 532b	Epidemiology of Cancer
CDE 533b	Topics in Perinatal Epidemiology
CDE 535b	Vascular Epidemiology
CDE 545b	Health Disparities by Race and Sex: Epidemiology and Intervention
CDE 550a	Introduction to Evidence-Based Health Care
CDE 562a	Nutrition and Chronic Disease
CDE 634a	Advanced Seminar in Perinatal Epidemiology
CDE 639b	Research Seminar in Perinatal Epidemiology
EHS 507a	Environmental Epidemiology
EHS 545b	Introduction to Environmental Genetics
EHS 553b	Epidemiological Methods in Injury Control
EHS 573b	Occupational Epidemiology

Comprehensive Examinations

The comprehensive examinations in CDE entail a three-part system emphasizing Biostatistics, Epidemiologic Methods, and the student's chosen specialty area.

The examination covering epidemiological methods includes both an in-class and a take-home portion. One faculty member is responsible for coordinating this examination, and the examination content is developed by the overall faculty. The specialty area examination is usually prepared in a tutorial with one or more faculty members.

Research Experience

In a number of courses, students gain actual experience with various aspects of research including preparation of a research grant, questionnaire design, preparation of a database for analysis, and analysis and interpretation of real data. In addition, doctoral students can gain research experience by working with faculty members on ongoing research studies prior to initiating dissertation research.

The Dissertation

For the doctoral dissertation, some candidates will design and develop their own research protocol, collect the data, and conduct appropriate analyses. However, epidemiologic studies are often large, time-consuming, and expensive enterprises that often cannot be realistically completed within the time frame expected for a doctoral dissertation. Consequently, some dissertations often result from "piggy-backing" the dissertation research onto a larger study being conducted by a faculty member. If a student has previously documented experience with data collection, the doctoral dissertation may emphasize the statistical analysis of a data set in such a way as to address a new hypothesis. However the thesis is constructed, the division requires that the research makes a significant contribution to new knowledge in the field of epidemiology.

Oral Presentation of the Doctoral Dissertation

Whenever possible, the oral presentation of the doctoral dissertation is scheduled during the Chronic Disease Epidemiology seminar. The faculty member organizing the seminar must be contacted to arrange a date.

ENVIRONMENTAL HEALTH SCIENCES

The Environmental Health Sciences (EHS) doctoral program focuses on how the environmental agents — physical, chemical, and biological — affect human health, considered within the general framework of epidemiology and public health. Students are skilled in research, assessment, and evaluation of the impact of environmental stressors; they identify potentially adverse environmental agents, assess their exposures, determine their impact on health, and estimate the consequent risk. The Ph.D. emphasizes the preparation of students for scholarly careers in research and teaching.

Required Course Work

The student's adviser determines which core background requirements have been satisfied by previous course work, and which courses, if any, the student has to complete successfully. Subsequently, the student and his/her adviser form a plan for the student's course work.

Students typically complete the equivalent to all the EHS divisional course requirements for the EHS specialization area:

BIS 505a and b	Introduction to Statistical Thinking I & II
CDE 508a	Principles of Epidemiology I
EHS 502a	Physiology for Environmental Health Sciences
EHS 503b	Introduction to Toxicology
EHS 507a	Environmental Epidemiology
EHS 508a	Assessing Exposures to Environmental Stressors
EHS 509a	Environmental Toxicology
EHS 514a	Environmental Chemistry
EHS 518a	Environmental Measurement

In addition to the above required courses, students elect courses from the more specialized areas of environmental health (occupational health, risk assessment, etc.).

Students who select Environmental Epidemiology as their area of specialization are required to take the following courses:

BIS 623a	Applied Regression Analysis
BIS 625a	Categorical Data Analysis
CDE 516b	Principles of Epidemiology II
CDE 517a	Developing a Research Protocol
CDE 523b	Measurement Issues in Chronic Disease Epidemiology

Students who select specialization in an area other than Environmental Epidemiology, together with the faculty adviser, will identify the specialization area and determine the selection of courses required. These courses may come from other graduate programs in the department, as well as from programs in other parts of the University. Students are particularly encouraged to seek additional courses in such subjects as chemistry, cellular and molecular physiology, engineering, forestry, medicine, pharmacology, and physics.

Comprehensive Examinations

The comprehensive examinations in this division test the student's knowledge in three areas – a specialty and two other areas based upon the student's specialty. The majority of students select Environmental Epidemiology as their area of specialization, and then have Chronic Disease Epidemiology and Biostatistics as the additional areas covered in the comprehensive examinations. Specialization in other basic biomedical sciences or departments of the University is also possible.

Research Requirements

During the second term of the first year and the first term of the second year, students rotate through the laboratories of three faculty members in the division. In each case, over a period of six to eight weeks, the student participates in ongoing research activities, thereby gaining an opportunity to learn hands-on techniques in two subject areas within environmental health sciences.

The Dissertation

The dissertation for the Ph.D. degree must make an original contribution to the field.

EPIDEMIOLOGY OF MICROBIAL DISEASES

The goals for doctoral students in the division of Epidemiology of Microbial Diseases (EMD) are to obtain a current theoretical and practical base of epidemiological and microbiological principles, to master research methods, and to apply these skills to investigations of the biology of infectious organisms of public health importance, their transmission, and the epidemiology of the diseases they cause. The approach is multidisciplinary. It includes in-depth ecological, pathogenetic, clinical, cellular, immunologic, and molecular aspects of infectious diseases, their causative agents, vertebrate hosts, and vectors.

Required Course Work

Courses in biostatistics, epidemiology, and microbiology are strongly recommended. The specific courses recommended depend on the background of individual students and their stated research interests. An individual program that includes courses, seminars, and laboratory rotations is developed by the student and his/her advising committee with the advice of the EMD divisional representative to the Doctoral Committee. Student progress is reviewed at the end of each academic year.

The following courses are ones that are appropriate for Ph.D. students in EMD. However, other courses in EPH or in other departments may also be appropriate.

*CBIO 602a	Molecular Cell Biology
EMD 642a	Roles of Microorganisms in the Living World
EMD 650b	Biology of Disease Vectors
EMD 670a and b	Advanced Research Laboratories
EMD 680a	Advanced Topics in Molecular Parasitology
EMD 684b	Molecular and Cellular Processes of Parasitic Eukaryotes
*GENE 705a	Molecular Genetics of Prokaryotes
*GENE 734a	Molecular Biology of Animal Viruses
†MCDB 530a	Biology of the Immune System
†MCDB 539b	Advanced Immunology Seminar
*PATH 650b	Cellular and Molecular Biology of Cancer

First-year EMD students are required to take EMD 675a for a total of one credit. Second-year EMD students may audit this course.

Comprehensive Examination

EMD has adopted an oral and written comprehensive examination format. Components of the examination include the following: (1) readings with committee members on selected topics; these readings may require review and integration of course work, laboratory rotations, research seminars, and published literature; and (2) research proposals in two areas, one on the proposed dissertation topic and the other in an area distinct from the proposed dissertation topic. The research topics are selected by the examining committee from the student's suggestions, and submitted within a prescribed time frame in written form. The examination takes the form of questions from each member of the committee based on readings and an oral defense of both research proposals.

Detailed information regarding the EMD program is available from the EMD representative to the Doctoral Committee or the coordinator of graduate student affairs.

Research Requirements

A two-term sequence of laboratory training is required of all students and a third is strongly recommended. Each term involves a different investigator. These are offered as formal courses, and a full research report is prepared by the student at the end of the term. Each term is graded on a pass/fail basis. Instructors for the course act as tutors and monitor the progress of the work, although students are given a certain amount of independence in their work. Laboratory work is defined broadly, including experiments in the more traditional wet laboratory setting, as well as work in the field and on the computer.

HEALTH POLICY AND ADMINISTRATION

The doctoral program in health services research and health policy analysis is designed to educate individuals to apply knowledge derived from public health and social sciences (biostatistics, epidemiology, and microeconomics) and to creatively extend such knowl-

* These courses are offered in the School of Medicine.

† These courses are offered in the Graduate School of Arts and Sciences.

edge. Individuals with advanced preparation in health services research and health policy analysis prepare for research, teaching, or policy careers in both the public and the private sector. The program seeks to educate individuals to engage in activities on the forefront of (1) health services research, (2) health programs and outcomes evaluation, and (3) policy formulation and analysis.

Required Course Work

Students in the Division of HPA become prepared for their comprehensive examinations in the areas of biostatistics, epidemiology, health services research/policy, and economics/econometrics by completing the following courses or the equivalent of the topic areas covered in these courses. The divisional representative to the Doctoral Committee in conjunction with the student's adviser is responsible for determining if core course requirements have been satisfied by previous course work. If so, the student should apply for a course waiver through the Graduate School.

Biostatistics

BIS 505a and b	Introduction to Statistical Thinking I & II
BIS 623a	Applied Regression Analysis
BIS 625a	Categorical Data Analysis
BIS 628b	Longitudinal Data Analysis
BIS 635b	Topics in Statistical Epidemiology

Epidemiology

CDE 508a	Principles of Epidemiology I
CDE 516b	Principles of Epidemiology II
CDE 523b	Measurement Issues in Chronic Disease Epidemiology
CDE 619a	Advanced Epidemiologic Research Methods

Health Services Research/Policy

HPA 510a	Health Policy and Health Systems
HPA 514b	Government and Health Policy
HPA 529a	Policy Analysis and Health Politics
HPA 583b	Methods in Health Services Research
HPA 597b	Integrative Policy Analysis Seminar
HPA 617a and b	Colloquium in Health Policy and Health Services Research I & II

Economics/Econometrics

*ECON 545a	Microeconomics
*ECON 558a	Statistics and Econometrics
HPA 570a	Cost-Effectiveness Analysis and Decision Making
HPA 586b	Microeconomics for Health Care Professionals
HPA 587a	Health Care Economics

Comprehensive Examinations

The division of Health Policy and Administration (HPA) requires three areas of comprehensive examinations: biostatistics, epidemiology or economics/econometrics, and health services research and policy. The health services research and policy analysis examination consists of two parts, the general examination and the specialty area examination.

Research Requirements

All students are expected to develop their research skills through interaction with HPA faculty around ongoing faculty research. Advanced doctoral students (post comprehensives) are encouraged to assume regular teaching assignments during their third year.

M.D./PH.D. PROGRAM REQUIREMENTS

All M.D./Ph.D. students must meet with the director of graduate studies in Epidemiology and Public Health as soon as they affiliate with EPH. Students in this program are expected to meet the guidelines listed below in the timeframe outlined. The director of graduate studies must approve any variations to these requirements.

Teaching

One term of teaching as a TA 2 (10 hours/week) will be required without pay. If students teach beyond this requirement, they can be compensated. If a student has served as a teaching assistant elsewhere on campus, this experience may be counted toward the requirement. Divisional approval is required to waive the teaching requirement based on previous Yale teaching experience.

Rotations/Internships

Students should do two four-week rotations/internships with potential advisers in EPH. These short-term research projects can be either in a lab or working with a specific Principal Investigator. The purpose of these rotations/internships is to learn lab technique and/or to allow the student time to determine if the P.I.'s research interests are compatible with his/her research interests. These rotations/internships are usually done during the summer between the first and second years of medical school course work. In some cases students may need to defer this until the summer after the second year after taking certain courses and/or completing readings so that he/she possesses the background necessary for a successful rotation/internship.

Required Course Work

M.D./Ph.D. students are generally expected to take the same courses as traditional Ph.D. students. Divisional requirements may vary; therefore, students should confer with the DGS and/or their Ph.D. adviser.

Timeline for Qualifying Exam

Students generally will take medical school courses years 1 and 2, then EPH doctoral course work years 3 and 4 (all or part of year 3). The qualifying exam is generally taken in the summer following the fourth year.

Prospectus Timeline

Students are encouraged to be developing their prospectus during their third and fourth years of study, while taking courses in EPH. Upon completion of the qualifying exam, students should focus entirely on completion of the prospectus, which should be submitted *no later than* six months after the completion of the qualifying exams.

Thesis Information

Students should follow the guidelines in the Appendix regarding mechanics (typing, paper, and binding) and publication guidelines for the thesis. One hardbound copy of the thesis is to be submitted to the EPH Library by May 15. Students are asked to include in the thesis a form that provides permission to reproduce (as spelled out in the Appendix). Any possibility that access to thesis data may be restricted must be discussed with the adviser and/or division head, and the DGS if necessary, *before* the thesis work is started.

Course Descriptions

Key to Course Descriptions

Courses designated “a” meet in the fall term only.

Courses designated “b” meet in the spring term only.

Courses designated “a and b” are yearlong courses.

Bracketed courses are not offered in the current academic year.

BIOSTATISTICS

BIS 505a, Introduction to Statistical Thinking I. This course provides an introduction to the use of statistics in the fields of epidemiology and public health. Topics include descriptive statistics, probability distributions, parameter estimation, and hypothesis testing, as well as an introduction to sampling and simple linear regression. Statistical analysis using the Statistical Analysis Systems (SAS) software on the PC is introduced. *E. Claus.*

BIS 505b, Introduction to Statistical Thinking II. This continuation of BIS 505a covers multiple regression, analysis of variance, nonparametric tests, survival analysis, poisson regression, and logistic regression. The course concludes with a review of commonly used statistical methods. As in the first term, the Statistical Analysis Systems (SAS) software package is used for statistical analysis. Prerequisite: BIS 505a. *D. Zelterman.*

BIS 511a, GIS Applications in Epidemiology and Public Health. The study of epidemiology often seeks to determine associations between exposure risk and disease that are spatially dependent. Geographic information systems (GIS) are modern computer-based tools for the capture, storage, analysis, and display of spatial information. GIS technologies are just beginning to be used for public health planning and decision making. Public health applications of GIS provide cost-effective methods for evaluation interventions and modeling future trends, and also provide a visual tool for data exploration. This class teaches the technical and design aspects of implementing a GIS project in public health and provides students with basic tools for using GIS. Examples are given to introduce a variety of applications in the field of epidemiology. *T. Holford.*

BIS 525a and b, Seminar in Biostatistics. Faculty and invited speakers present and discuss current research. *A. Molinaro.*

BIS 538b, Survey Sampling: Methods and Management. This course reviews the major sampling plans: simple, stratified, systematic, and cluster random sampling. The uses of weighted data and ratio estimation are discussed. The course emphasizes application of methodology, including use of SUDAAN. Prerequisite: BIS 505b or equivalent. *R. Makuch.*

BIS 540a, Fundamentals of Clinical Trials. This course addresses issues related to the design, conduct, and analysis of clinical trials. Topics include protocol development, examination and selection of appropriate experimental design, methods of randomization, sample size determination, appropriate methods of data analysis including time-to-event (possibly censored) data, and interim monitoring and ethical issues. Prerequisite: BIS 505a or equivalent and second-year status. *R. Makuch.*

BIS 561b, Advanced Topics and Case Studies in Multicenter Clinical Trials. This course addresses advanced issues related to the design, conduct, monitoring, and analysis of multicenter randomized clinical trials. Topics include organizational, regulatory, and human rights issues; an overview of design strategies; advanced topics in sample size estimation and monitoring; data management and quality assurance procedures; cost-effectiveness and quality of life; and case studies of vaccine trials, factorial trials, primary and secondary prevention trials, large simple trials, strategy trials, and cost-effectiveness. The case studies include many of the classical and landmark clinical trials, such as the polio vaccine field trial, Physicians Health Study, and the trials of AZT for the treatment of AIDS. Prerequisites: BIS 505a and BIS 540a. *P. Peduzzi, P. Hartigan.*

BIS 623a, Applied Regression Analysis. This course covers linear regression, estimation, and testing hypotheses in multivariate regression, regression diagnostics, analysis of variance, and adjusting for covariates. Emphasis is on the application of methods. SAS software is used throughout the course. Prerequisite: BIS 505b or equivalent. *R. Gueorguieva.*

BIS 625a, Categorical Data Analysis. This course presents methods for analyzing categorical data in public health, epidemiology, and medicine. Topics include discrete distributions, log-linear models, and logistic regression. Emphasis is placed on the application of the methods and the interpretation of results by applying the techniques to a variety of data sets. Prerequisite: BIS 505b. *H Zhang.*

[BIS 628b, Longitudinal Data Analysis. This course covers methods for analyzing data in which repeated measures have been obtained for individuals over time. Different methods are discussed to handle both continuous and discrete longitudinal response data. Both subject-specific and population averaged approaches are covered (with particular reference to capturing the heterogeneity between different individuals). Some of the approaches covered include linear, nonlinear, and generalized mixed effects models, as well as generalized estimating equations. The course also covers exploratory methods, approaches for handling missing data, and possibly transition models and advanced topics such as multivariate longitudinal responses, nonparametric longitudinal responses, the joint consideration of longitudinal and survival data, and the joint consideration of longitudinal and spatial data. Emphasis is placed on applying the methods, understanding underlying assumptions, and interpreting results. Both SAS and S-Plus software are used throughout the course. Prerequisites: BIS 623a and BIS 625a.]

[BIS 631a, Topics in Genetic Epidemiology. This course discusses the role of human genetics in epidemiology and public health, focusing on the epidemiology of mendelian disorders and the genetic and environmental contributions to common, complex familial traits. Topics of discussion include study designs for assessing the importance of genetic factors (family, twin, and adoption studies), methods for determining mode of inheritance (segregation analysis), and identification and mapping of major genes through linkage analysis and disease-marker associations. Applications to coronary heart disease, psychiatry, neurology, and cancer are given. Prerequisites: BIS 505a and BIS 505b; basic genetics. *E. Claus, H. Zhao.*]

BIS 635b, Topics in Statistical Epidemiology. This course considers methods for analyzing the association of one or more factors with disease. Topics include the analysis of cohort studies, case-control studies, and vital rates. The analysis of matched data is also discussed. Emphasis is placed on the application and interpretation of the techniques. Prerequisites: BIS 505a and BIS 505b; BIS 623a or BIS 625a. *T. Holford.*

[BIS 637b, Stochastic Processes in Biology and Medicine. This course derives deterministic and stochastic models that describe population growth, as well as the development and spread of disease. The models are used to describe events in either discrete or continuous time. Emphasis is placed on the derivation of mathematical models and their application to the study of specific health questions. Prerequisite: STAT 541a. *D. Zelterman.*]

BIS 640b, Quantitative and Computational Methods in Bioinformatics. The Human Genome Project has created a great opportunity for biomedical research by providing enormous genetic information. A bottleneck in understanding the biological processes is the problem of how to make best use of the generated information. This course covers statistical techniques in clustering and classification, and artificial neural network, as well as computer algorithms for optimization and search. These techniques and algorithms are applied for and demonstrated in DNA sequencing, microarray analyses, and protein structure classifications. Students should have one year of master's-level statistical training or equivalent. The Ph.D. and M.D. students in Biostatistics are encouraged to take this course. Prerequisite: BIS 623a or equivalent. *H. Zhang.*

BIS 643b, Theory of Survival Analysis and Its Applications. This course presents the statistical theory underlying survival analysis. It covers different models of censoring and the three major approaches to analyzing this type of data: parametric, nonparametric, and semi-parametric methods. The application of this theory through some exemplary data sets is also presented. Prerequisite: STAT 541a, 542b. *H. Lin.*

BIS 645a, Statistical Methods in Human Genetics. Probability modeling and statistical methodology for the analysis of human genetics data are presented. Topics include population genetics, single locus and polygenic inheritance, segregation analysis using the transmission probability model and the mixed model, linkage analysis using LOD scores, genetic risk prediction models, disease-marker associations, and DNA finger-

printing. Prerequisites: genetics; BIS 505a and b, or equivalent; and permission of the instructor. *E. Claus, H. Zhao.*

[BIS 646a, Nonparametric Statistical Methods and Their Applications. Nonparametric statistical procedures including recursive partitioning techniques, splines, bootstrap, and other sample reuse methods are introduced. Some of the supporting theory for these methods is proven rigorously, but some are described heuristically. Advantages and disadvantages of these methods are illustrated by medical and epidemiological studies. Students may be required to compare these methods with parametric methods when analyzing data sets. Familiarity with basic statistical theory and computer languages is assumed. Prerequisites: STAT 541a and STAT 542b. *H. Zhang.*]

[BIS 691b, Theory of Generalized Linear Models. This course considers a class of statistical models which generalize the linear model through the link functions of response mean. Major varieties of GLMs including models for Gaussian, Gamma, binomial, un/ordered polynomial and Poisson responses are discussed. Goodness of fit of the models and overdispersion is considered. Extensions to correlated responses are examined through the approaches of quasi-likelihood and generalized estimating equation. The course covers both theoretical and applied aspects of data analytic issues arising from practice. Prerequisites: STAT 542b, BIS 623a, and some knowledge of matrix calculation. *H. Lin, H. Zhao.*]

CHRONIC DISEASE EPIDEMIOLOGY

CDE 505a, Social and Behavioral Influences on Health. This course provides students with an introduction to social and behavioral science issues that influence patterns of health and health care delivery. The focus is on the integration of biomedical, social, psychological, and behavioral factors that must be taken into consideration when public health initiatives are developed and implemented. This course emphasizes the integration of research from the social and behavioral sciences with epidemiology and biomedical sciences. *J. Ickovics.*

CDE 508a/EMD 508a, Principles of Epidemiology I. This course presents an introduction to epidemiologic concepts and methods. Topics include causation, measurement of disease rates, epidemic investigation, cohort studies, clinical trials, case-control studies, ecological studies, bias and confounding, effect modification, random variation and statistical significance, and screening. The course utilizes a wide variety of case studies from both chronic and infectious disease epidemiology. *R. Dubrow.*

CDE 516b, Principles of Epidemiology II. This is an intermediate-level course on epidemiologic principles and quantitative methods used in epidemiologic studies. Topics covered at the introductory level are revisited and covered in more depth and breadth, with an emphasis on quantitative issues involved in the design, analysis, and interpretation of epidemiologic studies. Certain new concepts and areas of studies are also introduced. Through readings, lectures, and problem sets, students are expected to

(1) develop an increased understanding of epidemiologic principles and methods; (2) identify strengths and pitfalls in the design, analysis, and interpretation of epidemiologic studies in the literature; (3) improve relevant quantitative skills; and (4) master epidemiologic methods to a degree necessary to initiate their own research projects and analyses. Prerequisites: CDE 508a and BIS 505a. *X. Ma.*

CDE 517a, Developing a Research Protocol. The objective of this course is to develop a research protocol from hypothesis formation to appropriate study design. Review of relevant background literature, consideration of appropriate statistical techniques, provision of adequate personnel and environment, and understanding of strengths and weaknesses of the proposed study are included. Students are divided into groups with each group responsible for developing a research protocol suitable for submission as a grant proposal to NIH. Special attention is given to writing techniques and style. Prerequisites: CDE 516b, second-year M.P.H. or doctoral status. *M. Irwin.*

CDE 518b, Introduction to Pharmacoepidemiology. The course provides a basic orientation to the study of safety, efficacy, and utilization of ethical pharmaceuticals. The application of epidemiologic methods to the field is emphasized. Among the subjects considered are the usefulness of databases from HMOs, governmental, international, and other sources; current pharmacoepidemiology research within Yale School of Medicine; the role of the Food and Drug Administration; the assessment of drug safety; and assessment of quality of life and the role of pharmacoepidemiology in a managed care environment. Prerequisites: CDE/EMD 508a, BIS 505a, and BIS 505b. *M. Bracken.*

CDE 521b, The Epidemiology of Selected Chronic Diseases. This survey course covers some of the major chronic diseases, including coronary artery disease, cancer, stroke, chronic obstructive pulmonary disease, diabetes, major depression, and Alzheimer's. Invited lecturers who are experts in the field cover the basic pathophysiology, etiology, epidemiology, risk factors, and public health importance of each. Approximately half of the scheduled classes are devoted to discussions of major research articles on these diseases. The course emphasizes developing a working knowledge of chronic diseases, the application of epidemiologic methods, and the capacity to read the literature critically. Prerequisites: CDE/EMD 508a, CDE 516b. *B. Jones.*

CDE 523b, Measurement Issues in Chronic Disease Epidemiology. This course addresses the measurement issues in chronic disease epidemiology from a practical perspective. The first part of the course covers the use and limitations of currently available techniques for measuring exposure to a number of etiologic factors such as diet, alcohol, tobacco, physical activity, psychological stress, and environmental/occupational exposures. The latter part of the course focuses on the measurement of outcome for some of the major chronic diseases, along with some practical considerations involved in conducting chronic disease epidemiology research. Prerequisite: CDE/EMD 508a. *S. Mayne.*

CDE 530a, Molecular Epidemiology of Chronic Disease. The course provides an in-depth overview of issues addressed in molecular epidemiology and its application in cancer research. Subjects covered in the course include basic biochemistry and molecular biology, biological mechanisms related to molecular epidemiology research, principles of molecular and biochemical analysis, biotechnologies and laboratory methods used in molecular epidemiology, and interpretation of study results. The course emphasizes the development of abilities to design and conduct molecular epidemiology research and to critically evaluate findings in the literature. Prerequisite: CDE/EMD 508a or permission of the instructor. (Biochemistry, cell and molecular biology are helpful, but not required). *H. Yu.*

CDE 531a, Health and Aging. Since 1900, the number of individuals 65 years and older has tripled and life expectancy has increased by about thirty years. In the course we examine some of the health issues related to this growing segment of the population. The class discussions address such questions as (1) How does the aging process differ between cultures? (2) What kind of interventions can best reduce morbidity in old age? and (3) How can health policy adapt to the aging population? This course integrates psychosocial and biomedical approaches to the study of aging. *B. Levy.*

CDE 532b, Epidemiology of Cancer. This course applies epidemiologic methods to the study of cancer etiology and prevention. Introductory sessions cover cancer biology, carcinogenesis, cancer incidence and mortality rates in the United States, and international variation in cancer rates. The course then focuses on risk factors for cancer (including tobacco, alcohol, diet, radiation, and occupation) and on major cancer sites (including colon, breast, and prostate). Emphasis is placed on critical reading of the literature. Prerequisites: CDE/EMD 508a. *B. Cartmel.*

CDE 533b, Topics in Perinatal Epidemiology. Pregnancy, delivery, and reproduction provide the course's organizing focus. The current perinatal epidemiologic literature is critically reviewed from a methodological perspective. Subjects studied include infertility, miscarriage, fetal growth retardation, preterm labor and delivery, aspects of prenatal care, perinatal risks for cancer and other chronic diseases, SIDS, and infant mortality. Students develop an understanding of what evidence is needed to establish causal relationships in this specialty. Implications of research findings for public health policy, individual decision making, and future studies are considered. *K. Belanger.*

CDE 534b, Approaches to Data Management and Analysis of Epidemiologic Data. This course provides students with basic skills of data management and data analysis. The SAS statistical program is used. Main topics include using SAS data sets, data manipulation, bivariate and multivariable analyses. Using existing data sets, students test their own hypotheses and develop a research project. Emphasis is placed on the practical application of the skills learned. The course is a useful preparation for the summer internship and for thesis data analysis. Prerequisites: BIS 505a, CDE/EMD 508a and students must have taken or must currently be taking BIS 505b and CDE 516b. *M. Desai.*

CDE 535b, Vascular Epidemiology. Vascular disease is the leading cause of death and disability among industrialized nations. This course introduces students to the major categories of cerebrovascular and cardiovascular disease. Students are challenged to think about how individual diseases contribute to the epidemic of vascular disease in the United States. In this course, students learn basic principles about the rates of disease, risk factors, clinical trial results, and outcomes of vascular diseases. Through the analysis of actual studies, students apply basic epidemiology to critically evaluate current literature and topics in the field of vascular epidemiology. Sessions include a clinical overview of a specific disease or risk factor, as well as highly interactive discussion of a specific epidemiologic topic or principle. Students are encouraged to develop their own solutions to current gaps in the epidemiologic literature. *J. Lichtman.*

CDE 545b, Health Disparities by Race and Sex: Epidemiology and Intervention. The United States Public Health Service states that “eliminating health disparities” is one of two overarching goals for the national health promotion/disease prevention agenda. This course takes a life-course perspective to examine the epidemiology of disparities from the perinatal period to older adulthood. We focus on differences in morbidity and mortality between females and males and between diverse racial/ethnic groups. The primary focus of this course is on understanding the critical determinants and consequences of health disparities, learning to think critically about studies in the field, and developing creative ideas for new approaches to research, intervention, and policy. This course covers state-of-the-science information, taken primarily from journal articles, across a broad range of topics including heart disease, cancer, and AIDS, as well as important psychological, social, and behavioral factors that influence health. Emphasis is placed on methodological issues, including measurement, study design, and conducting ethically responsible community-based research. This course focuses not just on understanding disparities, but on evaluating and developing interventions to reduce or eliminate them. Prerequisite: CDE 505a or 571b. *Faculty.*

CDE 550a, Introduction to Evidence-Based Health Care. Evidence-based health care uses best current evidence in addressing clinical or public health questions. This course introduces principles of evidence-based health care in formulating clinical or public health questions, systematically searching for evidence, and applying it to the question. Types of questions considered include treatment/prevention of disease, etiology, diagnostic testing, and prognosis. Particular consideration is given to the methodology of synthesizing evidence in a systematic review. Also addressed is the role of evidence in informing economic analysis of health care programs, clinical decision analysis, and clinical practice guidelines. Using a problem-based approach, students contribute actively to the classes and small-group sessions. Students complete a systematic review in their own field of interest using Cochrane Collaboration methodology. Prerequisites: BIS 505a and CDE/EMD 508a. *M. Bracken.*

[CDE 562a, Nutrition and Chronic Disease. This course provides students with a scientific basis for understanding the role of nutrition and specific nutrients in the etiology,

prevention, and management of chronic diseases. Nutrition and cancer are particularly emphasized. Other topics addressed include cardiovascular diseases, osteoporosis, obesity, diabetes mellitus, and aging. Prerequisites: biology, biochemistry, and physiology helpful. *S. Mayne.*]

CDE 570a, Epidemiology of Psychiatric Disorders. This course reviews the application of traditional epidemiologic methods to the study of psychiatric disorders. Emphasis is on study design and assessments. New technologies for case identification are discussed. Application of these methods to studies of the epidemiology and genetics of the major psychiatric disorders (e.g., depression, schizophrenia, anxiety disorders) will be reviewed. Prerequisite: CDE/EMD 508a. *S. Jacobs.*

CDE 571b, Psychosocial and Behavioral Epidemiology. This course provides a systematic overview of psychosocial and behavioral influences on health, illness, and recovery. The factors of interest that influence health include: individual stable characteristics (e.g., traits), characteristics of the primary social environment (e.g., family, friends), settings defined by social roles (e.g., work), and broader contextual factors reflecting social structural variables (e.g., social class). The interplay of the foregoing factors of interest with biomedical and clinical variables constitutes a central theme. *S. Kasl.*

CDE 572a, Preventive Interventions: Theory, Methods, and Evaluation. This course reviews the theory, methods, and evaluation of health promotion and disease prevention interventions conducted in multiple settings. Topics of promotion and prevention include physical activity, nutrition, obesity, cancer, cancer screening, cardiovascular disease, diabetes, smoking, alcohol and substance abuse, HIV and STDs, condom and contraception use, adolescent pregnancy, and psychiatric and mental health problems. The course combines didactic presentations, discussion, and critiques of health promotion and disease prevention interventions by students. This course is intended to increase the student's skills in evaluating health promotion and disease prevention interventions, at both the individual and community levels. Prerequisite: CDE 505a. *M. Irwin.*

CDE 574b, Developing a Health Promotion and Disease Prevention Intervention. This course is intended to be a practical "how to" application of concepts and methods learned in CDE 572a. The primary objective of this course is to gain experience in intervention research by developing a health promotion and disease prevention intervention. Students choose a health problem (e.g., physical inactivity, smoking, HIV risk) and develop an intervention focused on favorably changing the determinants and behavior that influence the health problem. The course emphasizes transferring concepts from the abstract to the concrete. Students develop an intervention manual consisting of actual intervention materials, and methods that specifically outline how the intervention will be designed, conducted, evaluated, and disseminated. Throughout the course, students participate in a peer review process to evaluate and give feedback for each section of the intervention manual. Prerequisite: CDE 572a. *T. Kershaw.*

[CDE 575b, Religion, Health, and Society. The course examines the impact of various dimensions of religiousness on mortality and health status, giving special attention to the relation between religion and other social factors such as age, gender, race, and class. Discussion focuses on the public health implications of the epidemiological findings including the nature and significance of faith-based programs serving health needs. Special attention is given to studies drawn from religiously diverse populations. *P. Van Ness.*]

[CDE 576a, Social Psychological Theories of Health. This course explores the application of social psychological theories to health. These theories emphasize the interaction of individuals and their environment. The course focuses on theories that generate hypotheses for research addressing public health problems, such as obesity and inequalities in health. The course critically reviews both classical and contemporary theories. Students are encouraged to think about the roles of theories in the development of research findings and how these findings can improve theory. Prerequisite: CDE 571b or permission of the instructor. *B. Levy.*]

CDE 578b, Applied Research Methods in the Social and Behavioral Sciences. This course equips students with hands-on experience with qualitative and quantitative research methods that are integral to the social and behavioral sciences. Key concepts include (1) study design and threats to validity as related to program evaluation; (2) measurement issues within the context of the developments, conduct, and analysis of health surveys; (3) focus group methodology; (4) statistical methods for testing behavioral models; and (5) research with human subjects. *K. Hudmon.*

CDE 605b, Gene Hunting—Research Methods to Identify Chronic Disease Genes. Advanced-level discussion of gene mapping for human chronic diseases and associated topics. Emphasis is placed on original research papers and their multidisciplinary aspect; extensive reading required. Topics include the linkage and association study designs and analytic strategies, disease evolution, current technologies in diagnosis and measures of genetic variation, and the successful studies. Weekly topics are subjected to change for the most up-to-date works that show advanced progress in the field. Prerequisites: BIS 505a, CDE 530a, BIS 631a. *J. Hob.*

CDE 619a, Advanced Epidemiologic Research Methods. This advanced course focuses on quantitative issues and techniques relevant to the design and analysis of observational epidemiologic studies. Starting with formal definitions of the commonly used epidemiologic parameters, and assuming a working knowledge of ANOVA and linear regression, the course covers analyses based on various related types of regression, e.g., logistic, Poisson, Cox, etc. The GLIM and PECAN computer programs are described and used throughout. Students analyze and discuss data sets of generally increasing complexity. Prerequisites: BIS 505a, 505b, doctoral status, or permission of the instructor. *H. Risch.*

ENVIRONMENTAL HEALTH SCIENCES

EHS 502a, Physiology for Environmental Health Sciences. The purpose of this course is to describe the basic physical properties associated with exposure to environmental stress and the physiological strategies used to maintain homeostasis in the human body. Prerequisites: biology, chemistry. *J. Stitt.*

EHS 503b, Introduction to Toxicology. This course examines factors that affect the toxicity of foreign substances. The absorption, distribution, excretion, and metabolism of foreign compounds are discussed. Introductory lectures in cell biology, teratology, chemical carcinogenesis, dose-response relationship, and behavioral toxicology are included. *J. Borak.*

EHS 505b, Introduction to Industrial Hygiene. Students are introduced to the practice of industrial hygiene: the recognition, evaluation, and control of health hazards in the workplace. A systematic approach to identifying hazards in the workplace is presented, and students are asked to exercise these techniques in at least one industrial worksite. Topics include regulation of health and safety in the workplace, air sampling and interpretation of sampling results, and approaches to reducing place exposures. *J. Sparer.*

EHS 507a, Environmental Epidemiology. Environmental epidemiology can provide insight about the association between environmental exposures of a population and adverse health outcomes. The potentials and the limitations of environmental epidemiology are explored as they are inherent in the design of suitable studies and as they manifest themselves in actual studies that have been conducted. The analysis and interpretation of such studies, as well as the consequences for the design and conduct of proposed studies, are examined. Prerequisite: CDE/EMD 508a or permission of the instructor. *T. Zheng.*

EHS 508a, Assessing Exposures to Environmental Stressors. This course examines human exposure to environmental stressors as it applies to environmental epidemiology and risk assessment. Indirect and direct methods of assessing exposures are reviewed and case studies are presented. *B. Leaderer.*

EHS 510b, Fundamentals of Environmental Health and Risk Assessment. This course is an overview of environmental health. Students are introduced to the fundamentals of environmental health from the perspective of using risk analysis to reduce environmentally induced disease. The principles used to apply toxicologic, statistical, and pharmacokinetics factors in the assessment of health risk from chemicals are emphasized. Quantitative risk assessment, exposure assessment, and risk characterization are emphasized. *L. DiPietro, Y. Liu.*

EHS 511a, Applied Risk Assessment I. Applied environmental risk assessment consists of the effective integration in a specific situation of what is known about pollution sources and their characteristics, about human exposures, about the entry and absorption

of pollutants, and about the adverse health effects associated with dosage exposure. In any actual situation there are uncertainties in all of the elements to be integrated. This course emphasizes methodologies in use and the limitations that inevitably constrain the process. A number of applied risk assessments are analyzed. *J. Borak.*

EHS 514a, Environmental Chemistry. The basic chemical principles underlying environmental pollutants in water, soil, air, and specialized media are introduced. Various categories of federally regulated compounds and elements are examined with respect to group characteristics, analytical measurement techniques of choice, sampling methods, and data interpretation. Selected chemical agents are studied with regard to their fate (possible transformations/decomposition) in the environment. Students develop insight into some current problems faced in applying pollutant measurements to public health, e.g., analytical precision, uncertainty, detection limits, chemical speciation, and toxicological properties. *M. Stowe.*

EHS 521b, Physical Activity: Physiology and Epidemiology. This course offers a general introduction to the health issues stemming from physical inactivity (or disuse). Basic principles of energy metabolism are covered, as well as both basic and state-of-the-art methods for physical activity assessment. Students examine the major physiologic systems' adaptation to exercise training and to de-training and how this adaptation may vary by age and sex. The relation of disuse to major chronic diseases across the age spectrum is discussed, as well as individual and community-based intervention strategies to modify behavior and ameliorate the putative effects of a sedentary lifestyle. Finally, the role of the built environment as an environmental "toxin" is examined using the basic principles of environmental health risk assessment (hazard identification, exposure assessment, dose-response, risk characterization, and risk management). Prerequisites: EHS 502a, second-year status. *L. DiPietro.*

EHS 525a and b, Seminar in Environmental Health. Students are introduced to a wide variety of research topics, policy topics, and applications in environmental health. Faculty members, public health professionals, and students make brief oral presentations and engage in related dialogues. The seminar is designed to help students develop topics for their M.P.H. theses. Second-year students have the opportunity to receive feedback on their developing research. *N. Stachenfeld.*

[EHS 532b, Indoor Climate. The impact of environmental factors in the indoor environment on human health and well-being is examined. Emphasis is placed on assessing the nature of and exposures to indoor air contaminants and different thermal micro-environments and their influence on health and comfort. *B. Leaderer.*]

[EHS 535b, Disaster Preparedness. This course focuses on the practical application of theoretical concepts related to disaster preparedness through a series of lectures by experts in the areas listed. Students are expected to actively participate in sessions. *L. Degutis.*]

EHS 545b, Introduction to Environmental Genetics. This course aims at understanding the role of interactions between genetic susceptibility and environmental exposures in human disease development. The molecular basis of human genetics and genetic variations are described. Biological responses to environmental exposures are also discussed, as well as biomarkers for detecting environmental exposures, biological effects, and genetic susceptibility. Human cancer and asthma are used as two examples to illustrate genetic approaches to environmental disease. Finally, the role of gene environment interaction in human disease is addressed in the context of human evolutionary history. The course includes formal lectures, article discussions, and short research essay. *Y. Zbu.*

[EHS 553b, Epidemiological Methods in Injury Control. This course addresses the application of epidemiological methods to injury surveillance, etiology of injuries, and the evaluation of the effects of injury control programs. Major topics include methods of scoring injury severity; distribution of injury types and severity in segments of the U.S. population; exemplar epidemiological studies of etiology; strategies to reduce incidence and severity; evaluation of attempts to change environments and behavior by standards, laws, persuasion, and economic incentives; and the use of cost-effectiveness, cost-benefit, and cost-savings analysis. Prerequisite: permission of the instructor or completion of epidemiologic methods course work. *L. Degutis.*]

EHS 570a, Public Health Management of Disasters. This course addresses the role of public health in disaster preparedness and management. It includes discussion of concepts in basic science, human responses to injury and illness, public health systems, and policy. Major topics include types of disasters and their consequences; the role of public health systems in disasters; hazard assessment and community vulnerability management; and mental health and environmental health issues in disasters. Practical applications of the concepts developed are emphasized, as are both the similarities and differences between domestic and foreign disaster management. Prerequisite: CDE/EMD 508a. *D. Cone.*

[EHS 573b, Occupational Epidemiology. This course considers various approaches to the epidemiologic evaluation of health hazards in the workplace. The work includes consideration of specific substances. Critical review of the literature is stressed. Intermediate to advanced techniques in study design and analysis of occupational epidemiologic studies are included. Prerequisites: BIS 505a and CDE/EMD 508a. *M. Cullen.*]

EHS 575a and b, Introduction to Occupational and Environmental Medicine. This yearlong course presents a broad overview of the principles of occupational and environmental medicine. In the fall term the major diseases of environmental origin are presented. In the spring term the major hazards — chemical, physical, and biologic — and the settings in which they occur are examined. *M. Cullen (fall), M. Russi (spring).*

[EHS 621b, **Environmental Health Risk Assessment**. Case studies on various topics and problems in the area of risk assessment in relation to environmental health are presented. Topics include modeling, victim compensation, perception, cost-benefit, ethics, comparable risk, validity, data and assumptions, historical aspects, animal versus human data, and federal risk assessment procedures. Prerequisite: doctoral status or permission of the instructor. *J. Borak.*]

EHS 655, Readings in Environmental Health. By arrangement with instructor, students study environmental topics through the current literature, often to develop a research or thesis protocol. Prerequisite: doctoral status. *Faculty.*

EPIDEMIOLOGY OF MICROBIAL DISEASES

EMD 508a/CDE 508a, Principles of Epidemiology I. This course presents an introduction to epidemiologic concepts and methods. Topics include causation, measurement of disease rates, epidemic investigation, cohort studies, clinical trials, case-control studies, ecological studies, bias and confounding, effect modification, random variation and statistical significance, and screening. The course utilizes a wide variety of case studies from both chronic and infectious disease epidemiology. *R. Dubrow.*

EMD 512a, Immunology for Epidemiologists. This course is designed to introduce students to the fundamentals of immunology including antigens, antibodies, methods for detecting antibodies, cells of the immune system, products of such cells, and immune mechanisms. Experience is gained in the analysis of primary research papers with relevance to immunologic aspects of epidemiologic studies. Prerequisite: two terms of college biology. *N. Ruddle, D. McMabon-Pratt.*

EMD 520a, HIV-1/AIDS: Biology and Intervention. This course is geared toward advanced M.P.H. as well as Ph.D. and medical students who seek to gain an understanding of the HIV-1 life cycle, the effect of co-infections, and interventions designed to inhibit the spread of AIDS. Experts in specific topics covered in the course provide in-depth insights consistent with advanced nature of the course. Prerequisites: EMD 512b, EMD 542b. *L. Alexander.*

EMD 525a, Seminar in Epidemiology of Microbial Diseases. This is a weekly seminar series offered by EMD faculty in the fall term. The presentations describe the ongoing research activities in faculty laboratories as well as in EMD affiliated centers. The talks introduce the division's research activities as well as associated resources in the area. Attendance is required for first-year students. *C. Tschudi, A. Galvani.*

EMD 530b, Hospital Epidemiology. The history, descriptive epidemiology, surveillance methods, risk analysis methods, and economics of nosocomial infections are outlined in this introductory course. In-depth explorations of host, agent, and environmental factors influencing typical nosocomial illnesses in pediatric and adult services are reviewed by clinical faculty. Descriptive and analytical epidemiological methods are emphasized. *L. Dembry.*

EMD 536b, Investigation of Disease Outbreaks. This course provides students with the basic skills and perspectives necessary to investigate acute disease outbreaks. The emphasis is on the use of epidemiology to investigate outbreaks of infectious diseases, although the methods are not limited and can be applied to outbreaks of noninfectious diseases as well. Through this course, it is hoped that students will gain a better appreciation of epidemiology as the science of public health, and the use of epidemiology to guide public health interventions and the development of public health policy. *M. Cartter, R. Marcus.*

EMD 541b, Infectious Diseases: Epidemiology, Prevention, and Control. Students learn epidemiologic methods and concepts in infectious diseases, specific viral and bacterial infections, and problems illustrative of the methods and/or disease. Methods include surveillance, seroepidemiology, case/control and cohort studies, vaccine trials, epidemic investigation, principles of causation, immunization policies and their implementation, and evaluation in developed and developing countries. Specific viral and bacterial infections of the central nervous, respiratory, and intestinal tracts; the herpes viruses; slow and persistent viral infections; retroviruses, including AIDS; the exanthems; nosocomial infections; and the relation between viruses and cancer are discussed. The use of epidemiological concepts in the prevention of disease is emphasized. Prerequisite: microbiology. *K. Khoshnood.*

EMD 542b, Biology of Infectious Agents. This course explores the basic biology of infectious agents. Through a theme-based, integrated approach, students learn about the developmental, cellular, and molecular biology of bacteria, viruses, and eukaryotic parasites of public health importance. Emphasis is placed on transmission, host–pathogen interactions, and mechanisms of virulence. Prerequisite: EMD 512a. *M. Pettigrew, L. Alexander.*

EMD 545b, Biosafety and Biohazard Evaluation. Provides an overview of the field of Biological Safety and its application in a wide variety of settings for students at all levels who are interested in the epidemiology of microbial diseases. The course encompasses: micro- and molecular biology research, research involving laboratory animals; the design of laboratory facilities, field work, bioterrorism, indoor air quality investigations, and disinfection and sterilization. Pertinent federal, state, and local regulations, standards, and guidelines are presented and reviewed. Interactive exercises and case studies are employed to reinforce key course concepts. Students gain hands-on experience in select aspects of Biosafety through assignments involving the use of sampling equipment for biological agents in air, water, and surfaces. *B. Fontes.*

EMD 548a/G&G 562a/F&ES 506a, Remote Sensing: Observing the Earth from Space. Course topics include the spectrum of electromagnetic radiation, satellite-borne radiometers, data transmission and storage, computer image analysis, and merging satellite imagery with GIS in their applications to weather and climate, oceanography, surficial geology, ecology and epidemiology, forestry, agriculture, and watershed management. Preference to students in F&ES, Geology and Geophysics, Archaeology,

Anthropology, and Studies in the Environment. Prerequisites: college-level physics or chemistry, two courses in geology and natural science of the environment or equivalents, and computer literacy. *R. Smith, X. Lee, M. J. Ashton.*

EMD 557b/NUR 713b, Public Health Issues in HIV/AIDS. An introductory, broad-based survey course for students of all levels interested in the epidemiology of HIV/AIDS. The course covers virology, clinical issues, natural history of infection, laboratory testing, transmission, and prevention of HIV/AIDS. The course, designed to give students a general, comprehensive understanding of HIV/AIDS issues, is targeted to students beginning work in public health or HIV/AIDS, or for those who wish to expand their specialized knowledge base regarding HIV/AIDS. Regular attendance at the Yale AIDS Colloquium Series (YACS) and written synopses are required. *K. Khoshnood.*

EMD 560b, Epidemiologic Methods in STD/HIV Research. The purpose of this course is to explore epidemiologic concepts and methods in the design, implementation, and interpretation of studies focused on sexually transmitted infections including the human immunodeficiency virus. Students learn how to address analytical research challenges including, but not limited to, choice of study design; sample selection; data collection; minimizing bias, and confounding; generalizability. This course utilizes a combination of lectures and case studies. Through this course, students learn to critically read the published literature as well as to design a methodologically rigorous research study. Prerequisite: CDE/EMD 508a. *L. Nicolai.*

[EMD 563a, Introduction to Laboratory Techniques in EMD. Students learn basic laboratory techniques used as tools in epidemiology. These include the following: cell culture; rodent handling, inoculation, euthanasia, and tissue collection; virus quantification; PCR; arthropod identification; immunofluorescence; enzyme immunoassays; gel electrophoresis and immunoblotting; and nucleic acid extraction and hybridization methods. Prerequisites: immunology, microbiology, virology; familiarity with biosafety procedures; and permission of the instructor. *S. Compton.*]

[EMD 630a, Modeling Infectious Diseases: Theory and Application. This course provides an introduction to the mathematical modeling methods that have developed over the years for the description and control of infectious diseases, and also considers applications of such models to standard problems in epidemiology and more broadly in contemporary public health. The course emphasizes the formulation of basic models, the insight that derives from the formal analysis of such models, and the translation of such insights into the world of real problems. Prerequisites: CDE/EMD 508a and permission of the instructor, or doctoral status. *E. Kaplan.*]

EMD 642a/GENE 642a/MBIO 642a/MCDB 642a, Roles of Microorganisms in the Living World. This topical course explores the biology of microorganisms. Emphasis is placed on mechanisms underlying microbial adaptations and how they influence biological systems. Prerequisites: biology, chemistry, and biochemistry. *N. Ornston, C. Tschudi.*

EMD 650b, Biology of Disease Vectors. The majority of (re)emerging infectious diseases are associated with invertebrate vectors or animal reservoirs, especially in developing countries. This course introduces students to the major groups of medically important arthropods and the diseases that are transmitted by them. Lectures cover aspects of the natural history, ecology, and physiology of arthropod vectors as they relate to disease transmission. Intervention methods and current research trends are also critically evaluated. In addition, a short field trip introduces students to field techniques associated with vector biology research. Prerequisite: permission of the instructor. *L. Zheng.*

EMD 663a, Advanced Laboratory Techniques in EMD. The student learns laboratory techniques used as tools in epidemiology. The term is spent in a single laboratory. Methods in tissue culture, basic immunology, hybridoma techniques, microbial biochemistry and molecular biology, parasitology, or diagnostic virology are offered. This is a hands-on course with close supervision by technically trained personnel. Because most participating laboratories work with live agents, containment procedures and use of biosafety hoods are emphasized. Prerequisites: yellow fever vaccination may be required; familiarity with biosafety procedures; EMD 563a or prior laboratory experience required. *Faculty.*

EMD 664b, Biology of Eukaryotic Parasites. 2 credits. The course focuses on developmental biology, natural history, form, function, and cell and molecular biology of the major eukaryotic parasites of public health importance. Host parasite integration, co-evolution, diagnosis, pathogenesis, and control strategies are emphasized. Prerequisites: one year of biology, two years of chemistry. *C. Patton, S. Aksoy, C. Tschudi.*

EMD 670a and b, Advanced Research Laboratories. This course is taken for two or three terms. The course offers experience in directed research and reading in selected research laboratories. The first two terms must be taken in the first year of the doctoral program while the third term is taken at a time determined after faculty consultation with the student. Prerequisite: doctoral status or permission of the instructor. *Faculty.*

EMD 675a and b, Advanced Topics in Infectious Disease Epidemiology. A required course for EMD first-year doctoral students. Participating EMD faculty present real and theoretical situations relating to problems or situations in contemporary infectious disease epidemiology and provide specific questions or problems to be solved by the students. The students have two weeks to research the problem and prepare answers, which they then present and discuss during ninety-minute biweekly meetings with faculty. The goal is to provide doctoral students with an opportunity to apply the principles and practice of infectious disease epidemiology at an advanced level with close mentoring by faculty with diverse professional interests which will provide an overview of the discipline. Topics include biological and social aspects of infectious disease control and prevention, vaccine efficacy, molecular epidemiology, disease surveillance, and risk assessment. *D. Fish, J. Childs.*

EMD 680a, Advanced Topics in Molecular Parasitology. An advanced graduate-level course in modern parasitology. The class is focused on the reading and critical evaluation of student-selected papers from the current literature in cellular and molecular mechanisms of parasitism. Prerequisites: permission of the instructor. *C. Tschudi, C. Patton.*

EMD 682a and b, Advanced Topics in Vector Biology. This broadly based seminar is on current research topics in the biology of medically important vectors, vector-pathogen interactions, vector ecology, disease management, and vector control strategies. Topics are chosen from the current literature. Prerequisite: doctoral status or permission of the instructor. *L. Zheng, S. Aksoy.*

GLOBAL HEALTH

GHD 525a and b, International Public Health Practice Seminar. The learning objective is to provide second-year GHD students with the opportunity to discuss in depth up-to-date international public health practice together with GHD faculty and invited speakers. The focus of discussions is on strategic and hands-on examples: fund raising, resource mobilization, dealing with international media, organizing immunization days, emergency response, to name but a few. *N. Groce.*

GHD 541a, Community Health Program Evaluation. This course develops students' skills in designing program evaluations for public health programs, including non-governmental and governmental agencies in the United States and abroad. Students learn about different types of summative and formative evaluation models and tools for assessment. The course content is based on an ecological framework, principles of public health ethics, a philosophy of problem-based learning, and critiques of evaluation case studies. Students write evaluation plans for a specific existing public health program. Students may also work as a team with a local community health agency reviewing their evaluation plans and providing guidance on developing a program evaluation plan for one of the agency's public health programs. *D. Stevens.*

GHD 542b, Community Health Program Planning. This course develops students' skills in conducting community assessments and planning and designing public health programs. The course content is based on an ecological framework, principles of public health ethics, and a philosophy of problem-based learning. Using case studies, students examine both U.S. and developing country projects and assessments and critique them for relevance and future application. Students write individual program plans for a specific public health problem. Through this exercise and related assignments throughout the term, students develop skills in strategic planning; developing project workplans, logic models, and logical frameworks; and writing budgets. In addition, students work on a practicum assignment or community project with three to five other students at a local agency and work on a project as described in the agency proposal. *K. Hartwig.*

GHD 543a, Gender, Health, and Globalization. This course is designed to examine the integration of gender, health, and sustainable development from a gender perspective. Drawing upon the work and experience of various researchers and activists across sectors and regions, and within a historical context, this course explores the social, economic, legal, political, and cultural influences on women in developed and developing countries. *K. Hartwig.*

GHD 545a, Global Aspects of Food and Nutrition. This course is designed to develop students' awareness of the complex web of factors that lead to malnutrition and to enable a basic understanding of the major diseases of malnutrition, including diseases of both undernutrition and overnutrition. The course covers nutritional assessment tools; the cultural, economic, agricultural, and policy context within which malnutrition exists; and approaches to reducing malnutrition. *D. Humphries.*

GHD 546a, Social Change and Population Health in International Perspectives. Many countries have experienced a rapid socioeconomic change in the past decades. These changes have shown both positive and negative impacts on population health. This course provides theoretical and empirical overviews on the relationships between social change and population health. The course begins with the conceptual framework of social determinants of health, social change and health, and some specific topics of the impacts of social change on population health. Students receive the country-based case studies of social change on population health. The course applies a combination of lectures, class discussion, case studies, and student presentations. Student participation is a critical component of this course. *H. Wang.*

GHD 548b, Global Aspects of Chronic Diseases. This course provides an overview of the epidemiological and economic impact of selected chronic diseases (cardiovascular disease, cancer, diabetes, and chronic respiratory diseases) and three major risk factors (tobacco, unhealthy diets, and physical inactivity) in developing countries. The importance of key determinants (demography, urbanization, and globalization) as drivers of these future trends in unhealthy consumption is outlined. The role of international players from the UN system, the private sector, civil society, and academia in contributing to control efforts is discussed. Major policy initiatives to address the prevention and control of chronic diseases globally are presented. These include the WHO Framework Convention on Tobacco Control and the Global Strategy on Diet, Physical Activity and Health. Interactive seminars allow students to appreciate the way in which global policies are made in complex areas of public policy. Prerequisite: CDE 521b, GHD 551a (or simultaneously). *D. Yach.*

GHD 551a, Introduction to Global Health. This course introduces students to the major epidemiological trends and their determinants from a global and development perspective. Causes of death, disease, and disability at different ages and stratified by development status, class, gender, and race are discussed. International policy responses to the

burden of disease are critically discussed within the context of considering the effectiveness of international institutions' roles in promoting global and national health. Specific attention is given to the roles of the World Health Organization, the World Bank, UNICEF, major international NGOs, and influential corporate interests. *N. Groce, D. Yach.*

GHD 555b, WHO Framework Convention on Tobacco Control: Addressing the Global Tobacco Control Epidemic. The recently ratified WHO Framework Convention on Tobacco Control forms the basis for this course. Topics such as the history of tobacco, how the modern cigarette is made, mortality and morbidity associated with tobacco use, advertising tobacco products, tobacco use as an issue of human rights, global costs of tobacco, tobacco control strategies and policies, and harm reduction are included. Each session includes a lecture followed by general discussion. Evolving FCTC protocol development is highlighted and critically assessed. Prerequisites: GHD 551a, CDE 508a. *D. Yach.*

[**GHD 579a, Cross-Cultural Issues in Health.** This course provides an introduction to non-Western medical systems and how these articulate with (and often compete with) the established modern system. Emphasis is placed on understanding alternative beliefs and practices as systems with coherent cultural-based theoretical constructs that must be addressed when seeking to improve health in many communities. *N. Groce.*]

GHD 580b, Qualitative Research Methodology. This course is intended to provide M.P.H. students with a solid grounding in qualitative research methodology. Specific attention is directed to teaching students both how to collect and how to interpret qualitative data. Attention is also directed to the manner in which qualitative data can be integrated with quantitative data to allow better understanding of complex problems in public health. *N. Groce.*

GHD 585b, Comparative Health Care Systems. This course provides students the opportunity to examine the unique circumstances in which national systems evolve and the ways countries confront old, emerging, and new problems. Countries throughout the world have come up with vastly different approaches to deliver health care services, and as a result outcomes vary widely from country to country. There is clearly no one set of health care systems that provides the best outcomes. Students are introduced to several most common topics related to health care system development including health financing, provider payment methods, health care organization structure, and health care regulations. The course emphasizes the importance of approaching the study of health systems from an interdisciplinary perspective. Economic, political, and ethical issues that underpin health systems are compared using examples from representative countries at different stages of economic development and health care reform. *H. Wang.*

GHD 586a, Global Health and Human Rights. This course provides a basic understanding of human rights core principles and practices while concentrating on the complex linkage between health and human rights. The course emphasizes the implications of human rights for public health practitioners and introduces them to the framework and

methodologies for analysis of human rights and public health interaction. Students are expected to become familiar with a human rights impact assessment tool and use it throughout the course. Such topics as women's rights, children's rights, AIDS and human rights, violence, and health literacy are explored. Prerequisite: second-year M.P.H. status and GHD 519b or permission of the instructor. *W. Brown.*

[GHD 590a, Global Health Policy and Governance. This core course is designed for students with a basic understanding of health policy making and analysis. The course applies this knowledge to global and international policy in relation to health problems and issues. It draws on a framework that explores the roles of context, actors, and processes involved in health policy making. Particular attention is given to the role and effectiveness of the World Health Organization, the World Bank, and selected private-public partnerships in improving global health. By the end of the course, it is expected that students appreciate the complex and political nature of policy formulation at the global level and understand the mechanisms through which it impacts on health policy at the national level. *D. Yach.*]

GHD 595b, Economic, Social, and Political Dimensions of Development. This course provides a framework for understanding social, economic, and political dimensions of development and examines how these dimensions impact individuals, groups, and communities, particularly disadvantaged and at-risk populations. The course explores how social, economic, and political forces and frameworks shape social justice, institutions, and policy and analysis in developing and transitioning economies. The course explores a range of issues, trends, and forces within each of the three dimensions of development and their relationship to health and well-being. The focus is primarily international, with perspectives and examples from developing and transitioning economies. *J. Ruger.*

[GHD 596b/HPA 596b, Critical Policy Issues in the AIDS Pandemic. This course is intended for students with an understanding of the epidemiology of HIV/AIDS (either through work experience or course work). Students in public health, medicine, nursing, law, management, and international studies will appreciate this in-depth interdisciplinary examination of key policy challenges that this global pandemic presents, as well as the sharpened skills in policy analysis that such examination necessarily fosters. Prerequisite: second-year M.P.H. status or permission of the instructor. *M. Merson.*]

HEALTH POLICY AND ADMINISTRATION

HPA 510a, Health Policy and Health Systems. This course provides an introduction to the making and understanding of health policy. The various goals of policy making and the alternative means of achieving those goals are examined. Health issues are placed in the context of broader social goals and values. The current performance of the health care system is assessed, with particular emphasis on shifting needs, rising costs, and changing institutional arrangements. The course provides an overview of the important

actors in the health care and political systems and introduces students to methods for understanding their behavior. Students apply these methods to a set of concrete policy issues. *M. Schlesinger.*

HPA 514b, Government and Health Policy. This course is designed to familiarize students with the various processes by which governmental health policy is made in the United States, and with current policy debates. One focus of the course is to understand the politics underlying the successes and failures of health policy making during the course of the twentieth century. This includes a discussion of the relevant governmental institutions, political actors, the major national programs that have been established, and how political actors use resources and set their strategies. *C. Barry.*

HPA 516a, Clinical Concepts: Individuals, in Sickness and in Health. This course is directed at students with no or little background in biomedical or clinical sciences. The normal anatomy and physiology of the major organ systems are described to serve as a basis for understanding disease processes of public health importance. The course is taught by a practicing clinician and draws liberally from actual patient care experiences, as well as from the current medical literature. The course assumes little prior knowledge, but does develop some fairly complex concepts necessary to understand the workings of the human body. There is substantial emphasis placed on the interdependence of clinical medicine and public health, and on medical humanism. (An appreciation for poetry is desirable, but not required.) Upon completing the course, students will have a working knowledge of the human body, its remarkable adaptations, and its myriad vulnerabilities; facility with medical terminology; an understanding of clinical decision making; and familiarity with medical technology. *D. Katz.*

HPA 518a, Practice Seminar in Health Management. The practice seminar is designed to hone students' skills in reviewing and critiquing the analyses and conclusions of experts in health management. Students are exposed to a variety of "real-world" issues facing health care managers and leaders. The course begins with two didactic sessions presenting the management background and issues related to the current year's course topics. (Examples of relevant topics might be managed care, information management, etc.) The chosen themes are then addressed from multiple perspectives, including those of hospitals, clinics, long-term care facilities, integrated health systems, managed care organizations, pharmaceutical companies, regulatory agencies, and research organizations. Required for second-year Health Management students. Prerequisites: HPA 510a and HPA 560a. *J. Bradley.*

HPA 529a, Policy Analysis and Health Politics. This course provides students with policy analysis skills and teaches students to think critically and write succinctly about health care policy. The course integrates the study of policy analysis and the world of health politics as analysts must do in real life. The course begins broadly by thinking first about the nature of public policy and the theories of policy analysis and policy decision making. Next, eight key components of the policy analysis process are considered, and

the impact of major political organizations and institutions on the process of analyzing and selecting public health care policy is jointly examined. Prerequisite: HPA 510a. *P. Keenan.*

[HPA 538a, Regulation and Public Health Policy. This course provides students with an understanding of the role of government regulation in public health and health-related markets. Students learn to analyze how economic and political forces can influence both the development and the implementation of public health regulations. The course utilizes theories and empirical evidence from economics, political science, law, and public health to help students answer five questions relating to government intervention in health-related markets: Why regulate? How are regulatory rules made? How are regulations enforced? How do we determine whether regulations are successful? What alternatives exist to regulation? Students also apply insights and concepts from the course to explain policymaking in public health bureaucracies. Prerequisite: microeconomics or permission of the instructor. *Faculty.*]

HPA 542a, Health of Women and Children. The focus of this course is women's and children's health and health care in the United States. Emerging health issues and related health policy are presented and discussed in terms of epidemiology, including racial/ethnic disparities and effects of poverty; utilization and financing of children's health care; and existing programs and public policies that facilitate access to care. Data sources and data needs are identified. Topics may include history of MCH programs and policy, Medicaid and SCHIP, low birth weight and infant mortality, maternal mortality, reproductive health, breast and cervical cancer screening, pediatric oral health, pediatric asthma, childhood obesity, adolescent health care and teen pregnancy, children with special health care needs, childhood injuries and injury prevention. Students are expected to critically evaluate the public health implications of selected conditions and the effect of public policy on availability, accessibility, acceptability of services and accountability in health care for women and children. *M.A. Lee.*

HPA 544a, Public Law and Public Health: The Law, the Individual, and the State. This course provides students with a basic orientation to the law, the legal system, and legal decision making as they relate to the public's health. Emphasis is on the relation between the autonomy of the individual and the power of the state in addressing issues affecting the public's health. Topics include civil commitment, right to refuse treatment, procreation, human experimentation and clinical research, domestic violence, adoption and foster care, religious practices, and seat belt and helmet laws. Issues that must be considered in assessing the state's silence, omission, intervention, or intrusion into health matters of the person, the family, or the group are discussed. Prerequisite: second-year M.P.H. status. *J. Culhane.*

HPA 545a, Health Care Disparities. This course explores what constitutes and explains a disparity in health care. Emphasis is placed on studying the history of disparities in the United States in order to understand the current state of disparities, and on

evaluating the effectiveness of ongoing strategies to eliminate them, such as increasing insurance coverage and the delivery of culturally competent health care. The course also examines sociological models that explain disparities in health care and requires students to evaluate and expand on these models. Prerequisites: HPA 510a, HPA 514a, CDE 505a. *S. Geballe.*

HPA 546a, Ethical Issues in Public Health. Public health policy is always the product of controversy. Scientific considerations blend with political and ethical conflicts in public health; questions of autonomy, coercion, justice, and the common good are central. This seminar discusses these issues of ethics and political theory in reference to selected public health issues such as preventive medicine and behavior modification, smoking, control of infectious disease, and contraception and teen pregnancy. *B. Jennings.*

HPA 547b, Law and Ethics of Health Care Organizations. This course is a survey of legal topics important to the management of health care organizations. It is designed to acquaint the future health care manager with the basic legal issues that daily affect the provision of health care services. The course examines the relationships among the parties involved in the delivery of health care; the law of business organizations, including that of corporations and partnerships; the legal constraints that affect health care organizations, including state and federal regulatory laws, labor relations, and antitrust doctrines; and doctrines particularly applicable to managed care organizations. The course also considers a variety of emerging legal issues in the health care field. *T. Ruger.*

HPA 555a and b, Health Management Practicum. The Health Management Practicum is a project-based learning experience. Students work five hours per week for one term. Designed to parallel the Doctor-Patient Encounter class offered to medical students in which students are paired with practicing physicians, the Health Management Practicum allows students to focus on current issues confronting a hospital department while working under the guidance of a departmental administrator. Permission of the instructor is required. *S. Busch.*

HPA 560a, Health Care Finance and Delivery. This course introduces students to the organization and operation of the American health care system. The course examines systems of health care delivery and finance and recent trends in their organization, including the growth of managed care. The course seeks to provide students with an understanding of the existing structure of the system and to provide them with conceptual frameworks. *H. Forman.*

HPA 561b, Capstone Course in Health Management. This course presents a range of management issues in health services delivery. The course integrates the tools of accounting, finance, marketing, organizational behavior, operations research, and strategic planning in the context of health systems management. Influences and constraints related to the political and regulatory environment are explored. *T. Olmstead.*

HPA 562b, Health Care Information and Performance Management. This course is designed to introduce the principles and tools of financial analysis and management. Students apply accounting theories and tools to analyze financial issues facing health care policy makers and managers, and to elucidate the variety of payment arrangements among various payers and providers. *A. Epstein.*

[**HPA 564a, Integrated Clinical/Financial Information Management.** No matter what the regulatory or payment environment is, management of health care delivery systems depends upon data. In this course, theory of information management and applications are provided, using real data. The course uses a powerful local resource, the work of the Resource Information Management System (RIMS) at Yale–New Haven Hospital, as the basis for learning about the clinical, financial, operational, and technical input to a management information system. The uses and applications of information in planning, developing, operating, negotiating, and evaluating health care service are stressed. HPA 560a, or equivalent, and accounting are desirable but not required. *Faculty.*]

HPA 570a, Cost-Effectiveness Analysis and Decision Making. This course introduces students to the methods of decision analysis and cost-effectiveness analysis in health-related technology assessment, resource allocation, and clinical decision making. The course aims to develop the following: (1) technical competence in the methods used; (2) practical skills in applying these tools to case-based studies of medical decisions and public health choices; and (3) an appreciation of the uses and limitations of these methods at the levels of national policy, health care organizations, and individual patient care. *D. Paltiel.*

HPA 583b, Methods in Health Services Research. This course introduces students to both quantitative and qualitative methods for research in health services. Topics include research objectives and hypotheses formulation, study design, sampling techniques, measurement, data analysis, results presentation, and discussion. Students synthesize these skills in the final paper. Prerequisite: BIS 505a. *A. Epstein.*

HPA 586b, Microeconomics for Health Care Professionals. This course introduces students to microeconomics. Emphasis is placed on topics in microeconomics of particular relevance to the health care sector. Attention is paid to issues of equity and distribution, uncertainty and attitudes toward risk, and alternatives to price competition. This course is designed for students with minimal previous exposure to economics. *S. Busch.*

HPA 587a, Health Care Economics. This course applies the principles learned in Microeconomics for Health Care Professionals (HPA 586b) to the health of individuals, to health care institutions and markets, as well as to health care policy. The economic aspects of health behaviors, hospital markets, cost-benefit analysis, regulation, and the market for physician services are covered. Prerequisite: microeconomics or permission of the instructor. *D. Leslie.*

[HPA 588b, Multivariate Statistical Methods: Causal Modeling and Measurement Theory. This is an advanced course in quantitative methodology. It begins with linear regression and works its way to simultaneous equations with unobserved variables. The aim of the course is to provide students with the statistical background necessary to read and conduct quantitative research. There is special effort to integrate applications into presentations of statistical theory. A weekly computer lab is part of the course. Prerequisite: PLSC 500 or equivalent. *D. Green.*]

[HPA 590b, Economics of Drugs and Crime. The primary topic is illicit drugs and their use. The course covers the prevention, treatment, and consequences of the use of illicit drugs, and public policies to mitigate the adverse consequences. Crime is discussed as it relates to illicit drugs. The intellectual basis and many of the readings come from the economics field. Some economic concepts are taught in class. The class starts with introductory material on drugs, crime, and the association between drugs and crime. Readings and lectures provide the background information, facts, and in some cases the history of topics. Public policy solutions to help to mitigate the adverse consequences of drugs and crime are discussed. No prerequisites, but a familiarity with microeconomics is preferred. *J. Sindelar.*]

HPA 592a/NUR 723a, Concepts and Principles of Aging. This multidisciplinary course provides the major concepts and principles of gerontology. Students are introduced to a variety of theories of aging in the biopsychosocial spheres. Delivery systems of care for the elderly are explored along with recent social policy initiatives as they relate to the elderly. Research initiatives are presented throughout the course. *M. Bourbonniere.*

[HPA 596b/GHD 596b, Critical Policy Issues in the AIDS Pandemic. This course is intended for students with an understanding of the epidemiology of HIV/AIDS (either through work experience or course work). Students in public health, medicine, nursing, law, management, and international studies will appreciate this in-depth interdisciplinary examination of key policy challenges that this global pandemic presents, as well as the sharpened skills in policy analysis that such examination necessarily fosters. Second-year M.P.H. status or permission of the instructor. *M. Merson.*]

HPA 597b, Capstone Course in Health Policy. This course is designed as the capstone educational experience for students concentrating in health policy. It integrates previous course work in health policy and public health and facilitates students' transition from the academic setting into the world of professional policy analysis. Students explore different strategies for policy analysis and associated models of professionalism. They learn how to select the appropriate strategy and disciplinary perspective for addressing a social problem. Students also learn how to identify and frame health policy problems. They gain an understanding of how framing may be used to change the focus of policy debates. Finally, students learn to present ideas in the sort of crisp and concise fashion required of professional policy analysis. These issues are studied in a series of applied areas, includ-

ing substance abuse and the community obligations of managed care plans. Prerequisite: HPA 510a or equivalent. *M. Schlesinger; C. Barry.*

[HPA 603b, The Ethical Conduct of Research. This seminar exposes students to both practical and theoretical issues in research ethics. The focus is on real-world situations in public health research with the aim of equipping students to function as responsible researchers. Representative areas to be addressed include, among others, informed consent; research with vulnerable populations; privacy and confidentiality; the collections, retention, and reporting of data; federal regulations and institutional policies governing research; research in developing countries; authorship and publication; scientific misconduct; and conflict of interest. Prerequisite: doctoral status or permission of the instructor. *Faculty.*]

HPA 612a and b, Interface of Health Policy and Clinical Care. This course explores health policy dilemmas that have an impact on both populations and individual patients. The emphasis is on balancing the demands of public and private health care delivery, and on critical decision making. Current topics are chosen each term. Examples include resource allocation in end-of-life care, breast cancer screening, medical malpractice and tort law, physician-assisted dying, and appropriateness of invasive hemodynamic monitoring. Students receive a packet of readings from the current literature each week. Classes consist of student presentations followed by discussion and debate. Discussions are moderated by an expert faculty member from EPH, the School of Medicine, or outside institutions as indicated. Permission of the instructor required. *D. Katz.*

HPA 617a, Colloquium in Health Policy and Health Services Research I. This seminar focuses on the analysis of current issues in health policy and on state-of-the-art methodological issues in health services research. The format includes guest speakers and presentations by EPH as well as other faculty and graduate students of ongoing research projects. Students participate in critical discussions of the issues that arise in both types of sessions. Prerequisite: doctoral status or permission of the instructor. *M. Schlesinger, J. Sindelar.*

HPA 617b, Colloquium in Health Policy and Health Services Research II. This seminar includes in-depth discussions of major policy concerns in the health and health care of vulnerable populations such as the poor, young, old, and disabled. The seminar also includes student presentations of their own research. Prerequisite: doctoral status or permission of the instructor. *M. Schlesinger, J. Sindelar.*

HPA 650a, Colloquium on Mental Health Services Research I. This seminar focuses on the state-of-the-art methods in the evaluation and the measurement of need for treatment and organization of mental health services. Students review ongoing research projects and develop research on the use of mental health services, prepare annotated bibliographies, and participate in the examination of relevant issues. Prerequisite: doctoral status or permission of the instructor. *M. Schlesinger, J. Sindelar.*

HPA 650b, Colloquium on Mental Health Services Research II. This seminar focuses on social and cultural factors in the development, diagnosis, treatment, and prevention of mental illness. Attention is given to the underlying theory and research in the social epidemiology of mental illness and the relation between stress and psychiatric status. The seminar also includes student presentations of their own research in mental health services and/or social psychiatry. Prerequisite: doctoral status or permission of the instructor. *M. Schlesinger, J. Sindelar.*

Tuition, Expenses, and Financial Aid

The standard student budget for M.P.H. students for the academic year 2005–2006 is as follows:

Tuition	\$26,600
Student Activity Fee	125
Books and Supplies	1,725
Yale Hospitalization/Specialty Coverage	1,335
Room and Board	10,765
Personal and Transportation	<u>3,090</u>
Total Budget	\$43,640

TUITION RATES

Full-time

Matriculated students who are enrolled in the M.P.H. program and are taking 4 or more course units in a term are considered full-time and must pay two full years of tuition (four terms).

Part-time

Matriculated students taking fewer than 4 course units in a term are considered part-time students. Part-time students pay tuition on a per course basis (\$2,700 per course).

Students with Advanced Medical Degrees (15-Course Shortened Program)

Full-time students enrolled in the 15-course-unit shortened program pay full tuition for one and a half years (three terms). Students in the program attending on a part-time basis (fewer than 4 course units per term) will be charged tuition on a per course basis (\$2,700 per course) during those terms in which they take fewer than four courses.

Joint-Degree Students

Joint-degree students with the schools of Forestry & Environmental Studies, Law, Divinity, Management, and Nursing, the Center for International and Area Studies, and International Development Economics in the Graduate School, pay three terms of tuition to EPH. Joint-degree students with the School of Medicine pay half the annual School of Medicine tuition for the two terms they attend EPH.

Yale Postdoctoral Residents and Fellows

Students in a Yale-affiliated postdoctoral program who have matriculated in the 15-course shortened program pay full tuition for one and a half years (three terms). Those in the 20-course program are required to pay tuition for two full years (four terms). Yale-affiliated postdoctoral residents or fellows who enroll in individual courses *prior to matriculation* will be charged tuition on a per course basis (\$2,700 per course).

Yale Faculty and Staff

Yale faculty and staff members that are taking individual courses for credit will be charged tuition on a per course basis (\$2,700 per course unit). Yale faculty and staff that have matriculated in the M.P.H. program pay the appropriate tuition rate (full-time or part-time).

Auditors

Auditors not affiliated with Yale University pay tuition on a per course basis (\$2,700 per course unit), and are required to receive the permission of the instructor as well as the permission of the registrar.

Individuals affiliated with Yale (but not currently paying tuition at Yale) will be charged 50% of the per course unit rate to *audit* a course. Permission of the registrar and the course instructor is required.

Matriculated M.P.H. students are not eligible to audit EPH courses.

M.S. in Biostatistics Students

M.S. students are required to pay two full years of tuition to the Graduate School of Arts and Sciences and should refer to the bulletin of the Graduate School.

Ph.D. Students

Ph.D. students should refer to the bulletin of the Graduate School of Arts and Sciences for information about tuition and fees.

TUITION REBATE AND REFUND POLICY

Because of changes in federal regulations governing the return of federal student aid (Title IV) funds for withdrawn students, the tuition rebate and refund policy has changed from that of recent years. The following rules became effective on July 1, 2000.

1. For purposes of determining the refund of federal student aid funds, any student who withdraws from EPH during the first 60 percent of the term will be subject to a pro rata schedule that will be used to determine the amount of Title IV funds a student has earned at the time of withdrawal. A student who withdraws after the 60 percent point has earned 100 percent of the Title IV funds. In 2005–2006, the last days for refunding federal student aid funds will be October 31 in the fall term and March 26 in the spring term.
2. For purposes of determining the refund of institutional aid funds and for students who have not received financial aid:
 - a. 100 percent of tuition will be rebated for withdrawals that occur on or before the end of the first 10 percent of the term (September 9, 2005 in the fall term and January 18, 2006 in the spring term).
 - b. A rebate of one-half (50 percent) of tuition will be granted for withdrawals that occur after the first 10 percent but on or before the last day of the first quarter of

- the term (September 25, 2005 in the fall term and February 2, 2006 in the spring term).
- c. A rebate of one-quarter (25 percent) of tuition will be granted for withdrawals that occur after the first quarter of a term but on or before the day of midterm (October 21, 2005 in the fall term and February 28, 2006 in the spring term).
 - d. Students who withdraw for any reason after midterm will not receive a rebate of any portion of tuition.
3. In the event of a student's death on or before the tenth day of a term, the tuition will be canceled in full. Should death occur after the tenth day of a term, the bursar will adjust the tuition on a pro rata basis.
 4. If the student has received student loans or other forms of financial aid, rebates will be refunded in the order prescribed by federal regulations; namely, first to the Unsubsidized Federal Stafford and/or Subsidized Federal Stafford Loans, if any; then to Federal Perkins Loans; next to any other federal, state, private, or institutional scholarships and loans; and finally, any remaining balance to the student.
 5. Loan recipients (Stafford, Perkins, or Yale Student Loans) who withdraw are required to have an exit interview before leaving Yale. Students will be notified by mail of the process.

STUDENT ACCOUNTS AND BILLS

Student accounts, billing, and related services are administered through the Office of Student Financial Services, which is located at 246 Church Street. The telephone number is 203.432.2700.

Yale Charge Account

Students who sign and return a Yale Charge Card Account Authorization form will be able to charge designated optional items and services to their student accounts. Students who want to charge toll calls made through the University's telephone system to their accounts must sign and return this Charge Card Account Authorization. The University may withdraw this privilege from students who do not pay their monthly bills on a timely basis. For more information, contact the Office of Student Financial Services at 246 Church Street, PO Box 208232, New Haven CT 06520-8232; telephone, 203.432.2700; fax, 203.432.7557; e-mail, sfs@yale.edu.

Yale Payment Plan

The Yale Payment Plan is a payment service that allows students and their families to pay tuition, room, and board in eleven or twelve equal monthly installments throughout the year based on individual family budget requirements. It is administered for the University by Academic Management Services (AMS). To enroll by telephone, call 800.635.0120. The fee to cover administration of the plan is \$65. The deadline for enrollment is June 21. For additional information, please contact AMS at the number above or visit their Web site at www.tuitionpay.com.

Bills

A student may not register for any term unless all bills due for that and for any prior term are paid in full.

Bills for tuition, room, and board are mailed to the student during the first week of July, due and payable by August 1 for the fall term; and during the first week of November, due and payable by December 1 for the spring term. The Office of Student Financial Services will impose a late charge if any part of the term bill, less Yale-administered loans and scholarships that have been applied for on a timely basis, is not paid when due. The late charge will be imposed as follows:

<i>If fall-term payment in full is not received</i>	<i>Late charge</i>
by August 1	\$110
by September 1	an additional 110
by October 1	an additional 110

<i>If spring-term payment in full is not received</i>	<i>Late charge</i>
by December 1	\$110
by January 2	an additional 110
by February 1	an additional 110

Nonpayment of bills and failure to complete and submit financial aid application packages on a timely basis may result in the student's involuntary withdrawal from the University.

No degrees will be conferred and no transcripts will be furnished until all bills due the University are paid in full. In addition, transcripts will not be furnished to any student or former student who is in default on the payment of a student loan.

Charge for Returned Checks

A processing charge of \$20 will be assessed for checks returned for any reason by the bank on which they were drawn. In addition, the following penalties may apply if a check is returned:

1. If the check was in payment of a term bill, a \$110 late fee will be charged for the period the bill was unpaid.
2. If the check was in payment of a term bill to permit registration, the student's registration may be revoked.
3. If the check was given in payment of an unpaid balance in order to receive a diploma, the University may refer the account to an attorney for collection.

FINANCIAL AID

Financial Aid Policies for M.P.H. Students

The EPH Student Financial Aid Office is located in the Office of Student Affairs, 47 College Street. Karen Wellman, Director of Financial Aid, can be reached at 203.785.5417 or karen.wellman@yale.edu. The financial aid policies at EPH are designed to assist all students as equitably as possible. Financial aid awards are determined annually based on the estimated cost of attendance for the year in which aid is awarded. Continuing students are required to reapply for aid for their second year. The estimated student budget includes all projected costs related to academic and living expenses. The budget does not include expenses related to maintaining an automobile.

Though EPH awards a limited number of merit scholarships, the majority of Yale financial aid is awarded on the basis of demonstrated financial need. Loans are first awarded, and, depending upon the remaining need, students may receive a need-based grant from EPH.

FEDERAL VETERANS EDUCATION BENEFITS

The M.P.H. program is approved for Federal Veterans Education benefits under the GI Bill. To check your eligibility for benefits, visit the Web site www.gibill.va.gov. To be enrolled, see the registrar.

LOANS

For 2005–2006, all U.S. citizens or permanent residents of the United States may be eligible to borrow up to \$31,000 from the Stafford loan program. This amount may vary depending on what other financial aid a student may be receiving. Stafford loans generally have a ten-year repayment period beginning six months after a student graduates or drops below half-time enrollment.

NEED-BASED GRANTS

The total grant support for all students is limited by the availability of funds. Should need exceed the supply of funds, additional loans will be made available.

Students who wish to be considered for EPH need-based grants must provide parental information. Parents need to complete the Parent Questionnaire which is part of the EPH financial aid application and submit a copy of their federal tax return.

ELIGIBILITY

Students who are matriculated in the M.P.H. program and are registered for 3 or more course units per term are eligible to apply for financial aid.

INTERNATIONAL STUDENTS

International students are **not** eligible to receive financial aid from the School or the federal loan programs. International students are eligible to apply for the GATE Y-Loan. This loan is sponsored by the University and does not require a cosigner. Contact the Financial Aid Office at 203.785.5417 or by e-mail to karen.wellman@yale.edu for information on these loans.

REPORTING OUTSIDE RESOURCES

Additional financial support in the form of loans, scholarships, fellowships, additional family support, or employment of any type must be reported to the Financial Aid Office. Any such changes may result in a proportional reduction in the financial aid awarded.

Academic Policies

FACULTY ADVISERS

Each student is assigned a faculty adviser upon entering the M.P.H. program. It is the responsibility of the adviser to work closely with the student to select courses, monitor academic progress, develop career plans, and ensure that students receive assistance necessary to achieve their full academic potential.

COURSE REGISTRATION

The first two weeks of each term are considered a “shopping period” in which students attend classes they are interested in taking. **All students must complete the online registration by September 14 in the fall term and January 23 in the spring term to avoid a \$50 late fee.** At the end of the two-week shopping period, all registrations are considered “complete.” Courses cannot be added after that date. See below for the course withdrawal policy.

Students are encouraged to enroll in courses in other Yale schools if there is space available and if the instructor agrees. Students must also receive written permission from the registrar’s office of the other school for courses taken at the Law School or the School of Management.

One course unit is awarded for any full-term course (not seminars or colloquia) taken in the Graduate School or another professional school. Courses taken in Yale College (undergraduate) must be 300 series or above in order to receive a course unit toward the M.P.H. degree.

COURSE WITHDRAWAL

Students may not add or drop courses after the registration deadline; however, they may withdraw from a course with the approval of their adviser. Students may withdraw from a course until midterm (October 14 in the fall term; March 3 in the spring term) without the course appearing on the transcript. From midterm until the last day of classes (December 2, fall term; April 21, spring term) a student may withdraw from a course; however, the course will appear on the transcript with a letter grade of “W.” Course Withdrawal Forms are available in the Office of Student Affairs or online at <http://publichealth.yale.edu/student/registrar>.

EXEMPTION FROM REQUIRED COURSES

Students who feel they have previously covered the material being presented in a required course can request a “course exemption” directly from the course instructor. This request must be approved *by the registration deadline* and should be submitted to the registrar on the “Course Exemption Form.” Exempted courses will be listed on the transcript with a grade of “Q.” Exempted courses cannot be used to satisfy the course unit requirement for the M.P.H. degree.

GRADING SYSTEM

The EPH grading system is designed to foster an atmosphere of cooperative learning. Consequently, EPH does not compute the grade point average (GPA) or class rank of its students. Students are graded only to provide them with a formal evaluation of their understanding of the concepts presented in their courses.

All EPH courses are graded Honors (H), High Pass (HP), Pass (P), or Fail (F). The Internship and seminars receive a grade of Satisfactory (S) upon successful completion. The grade of “Q” indicates courses for which a student has received an exemption.

A failure in any course remains on the student’s transcript. If the course is retaken, it is listed again on the transcript with the new grade.

In very rare cases, students may receive a grade of “Incomplete” (I). This designation is not a permanent grade and must be finalized at a later date. If the instructor agrees to give a grade of Incomplete, the instructor notifies the student and the registrar of the date by which all course requirements must be completed. The time limit for completion may not exceed one term. In cases where the student does not complete the course requirements by the agreed-upon date, the grade of “I” is changed to a grade of “F.”

The transcript is a permanent record. Grade changes may only be made if the instructor reports to the registrar that a clerical or computational error has resulted in an inaccurate grade. The University considers an instructor’s evaluation of the quality of a student’s work to be final. Disputes about a course grade that are alleged to result from discrimination based on race, sex, religion, national or ethnic origin, or handicap are resolved through the University’s student grievance procedures.

TUTORIAL SUPPORT

Students experiencing academic difficulty should seek prompt assistance. Students should first discuss the problem with the course instructor. Course instructors can suggest that a student’s academic difficulties be addressed by a course’s teaching assistant (TA). If after working with the TA the student continues to experience difficulty, the course instructor can recommend that specific tutorial assistance be provided to the student. The instructor should contact the associate dean for student affairs to arrange tutorial assistance.

All M.P.H. student transcripts are reviewed by the associate dean for student affairs at the end of each term. Advisers receive a copy of each advisee’s transcript both as an early warning of academic difficulty and as an aid to planning course load and selection.

ACADEMIC STANDARDS

Students in the M.P.H. program must pass all core course and divisional requirements. Any student who fails a required course must retake it and pass it. The Committee on Academic Progress will review the academic performance of a student whose record in any term shows significant decline, or if there is a reason for concern about the overall quality of a student’s work.

Academic Probation

The Committee on Academic Progress will place students whose academic work is unsatisfactory on Academic Probation. The committee will take into account the personal situation of the student, but a failing grade in any course will normally result in Academic Probation. Students who receive failing grades in two or more courses during a term, or who receive a second failing grade after being placed on Academic Probation, may be dismissed from the M.P.H. program.

CHANGE OF DIVISION

Divisional changes may be requested during the first academic year. Students who wish to change divisions must complete the “Change of Division” form, which requires the signature of both division heads and both academic advisers. Students must be sure to fulfill all course requirements for the new division. Change of Division forms are available either online (<http://publichealth.yale.edu/student/registrar.html>) or in the Office of Student Affairs.

Note: Because of the number of requirements and the sequencing of courses, students may not switch into the Health Management Program after the second week of the first term. Also, students may not switch into the Health Policy Division after the second week of their second term.

DUAL DIVISIONS

Dual divisional concentrations are *strongly discouraged* by the EPH faculty and are approved only in very unusual circumstances. Both division heads must agree to a dual-division concentration.

OTHER CHANGES AND APPEALS IN EDUCATIONAL PROGRAM

Other significant changes in a student’s educational program should be discussed with the student’s academic adviser, and requested in writing to the Committee on Academic Progress. Appeals resulting from decisions made by the Committee on Academic Progress must be addressed to the dean of Public Health, with the description of the basis for appeal. Appeals are heard by the Committee of Permanent Officers, whose decision is final.

Administrative Policies

STUDENT RECORDS

A permanent file is created for each student upon enrollment at EPH. This file contains the student's application, acceptance letter, registration forms, and academic transcripts, as well as copies of all correspondence to the student. Access to this file is governed by the Family Educational Rights and Privacy Act of 1974, also known as the Buckley Amendment, and by the Yale University Policy Statement on Student Records. When a student graduates, his/her file is stored for five years. After that, files are transferred to the Yale University Archives for permanent storage.

Official student records for currently enrolled students are housed in the registrar's office. Under the Buckley Amendment, student records are accessible to faculty members, deans, and staff members who have a legitimate educational interest in review of the records. Students may review all parts of their records except parental financial information (unless the student's parents have explicitly permitted such access) and confidential letters of recommendation.

Unless a student has requested in writing that the University not release "directory information" about him or her, the University may release the following directory information: name, address, telephone number, program, dates of attendance, and degrees received.

LEAVE OF ABSENCE

Occasionally, because of unexpected personal problems or other special circumstances, students request a leave of absence during their M.P.H. program. Students wishing to request a leave of absence must submit their request in writing to the associate dean for student affairs. A leave of absence is usually granted if a student is in good academic standing and is making satisfactory progress toward the degree. Leaves of absence may not be granted for more than two consecutive terms and may not be given retroactively. Students on leave of absence who fail to return after two consecutive terms will be considered withdrawn from the program. When a leave of absence has been approved, the student must notify the director of financial aid and the registrar.

The following conditions apply to students on leave of absence:

1. Students may not fulfill any degree requirements while on leave except for completing course work for which they have the instructor's written permission.
2. Students on leave are not eligible for student loans.
3. Students may owe tuition depending on when and why they leave.
4. Students may not use University facilities or be issued identification cards or access keys during a leave.
5. Students on leave may elect to enroll at their own initiative in the Yale Health Plan at full cost.

WITHDRAWAL FROM THE M.P.H. PROGRAM

A student who wishes to withdraw from the M.P.H. program must inform the associate dean for student affairs in writing and contact the Financial Aid Office. The student must also return his/her identification card and building keys to the registrar. Students wishing to reenter the program after withdrawing must reapply through the regular admissions process.

HUMAN INVESTIGATION SAFEGUARDS

All work by faculty or students undertaken anywhere that involves human subjects in ways subject to federal or Yale guidelines must be approved by the Human Investigation Committee (HIC) at Yale. Failure to obtain HIC clearance may result in dismissal from the University. Both faculty and students should be aware that these are not *pro forma* requirements but serious in intent, as well as consequences, if there is failure to comply.

Consultation is available during the academic year and during the summer months. Unless their work is done entirely in a laboratory with no human subject involvement, students should assume that their work *does* require HIC approval. It is safer to submit the forms and be informed that HIC approval is not needed, than not to submit them and later be told that they were required. Most student research receives expedited review, but some projects are reviewed by the entire HIC, a procedure taking several weeks. Thus, students are advised to submit their HIC protocols at the earliest possible time.

The student's faculty adviser and the faculty or student EPH representatives on the HIC can assist the student in preparing an HIC protocol. Many student research projects involving human subjects also require written informed consent. Students should make sure that all informed consent procedures and forms have been approved by the HIC. Arrangements may be made for review by mail for those students outside the New Haven area.

ADDITIONAL POLICIES

Additional University policies are kept on file in the Office of Student Affairs and are available for student reference. These policies include the Policy on Freedom of Expression, the Equal Opportunity Statement, the Sexual Harassment Policy, and the Yale University AIDS Policy.

University Resources and Services

A GLOBAL UNIVERSITY

In celebrating the Yale Tercentennial in 2001, President Richard C. Levin gave special weight to “Yale’s intention to become a truly global institution” by building on existing relationships and international activity. Since that time, the University has made great strides to intensify and broaden its efforts in the international arena. Exchanges of students, faculty, researchers, and fellows have grown significantly. Programs of study and research across the University increasingly incorporate international subject matter. To enhance all its initiatives in this direction, the administration has created a number of organizations and other specialized resources.

The most recently established organizational unit, inaugurated in 2003–2004, is the Office of International Affairs, which serves as an administrative resource to support the international activities of all schools, departments, offices, centers, and organizations at Yale; to promote Yale and its faculty to international audiences; and to increase the visibility of Yale’s international activities around the globe. Web site: www.yale.edu/oia.

The Office of International Affairs joins a range of other institutional resources, including:

Yale Center for International and Area Studies (YCIAS), the University’s principal agency for encouraging and coordinating teaching and research on international affairs, societies, and cultures; www.yale.edu/ycias.

Yale Center for the Study of Globalization, which draws on the rich intellectual resources of the Yale community, scholars from other universities, and experts from around the world to support teaching and research on the many facets of globalization, while helping to enrich debate through workshops, conferences, and public programs; www.ycsg.yale.edu.

Office of International Students and Scholars (OISS); www.oiss.yale.edu. See the description on pages 110–11.

Yale World Fellows Program, which hosts twelve to eighteen Fellows from outside the U.S. each year for a term of concentrated study and close contact on the Yale campus; www.yale.edu/worldfellows.

For additional information: “Yale and the World” is a compilation, on the Yale Web site, of resources for international students, scholars, and other Yale affiliates interested in the University’s global initiatives: <http://world.yale.edu>.

HEALTH SERVICES

Yale University Health Services (YUHS) is located on campus at 17 Hillhouse Avenue. YUHS offers a wide variety of health care services for students and other members of the Yale community. Services include student medicine, gynecology, mental health, pediatrics, pharmacy, laboratory, radiology, a twenty-three-bed inpatient care facility (ICF),

a round-the-clock urgent care clinic, and such specialty services as allergy, dermatology, orthopedics, and a travel clinic. YUHS also includes the Yale Health Plan (YHP), a health coverage option that coordinates and provides payment for the services outlined above, as well as for emergency treatment, off-site specialty services, inpatient hospital care, and other ancillary services. YUHS's services are detailed in the *YHP Student Handbook*, available through the YHP Member Services Department, 203.432.0246, or on the YHP Web site at www.yale.edu/uhs.

Eligibility for Services

All M.P.H. degree-candidate students who are taking three or more courses are enrolled automatically for YHP Basic Coverage. YHP Basic Coverage is offered at no charge and includes preventive health and medical services in the departments of Student Medicine, Internal Medicine, Gynecology, Health Education, and Mental Hygiene. In addition, treatment for urgent medical problems can be obtained twenty-four hours a day through Urgent Care.

Students on leave of absence or on part-time or extended study and taking fewer than three courses are not eligible for YHP Basic Coverage but may enroll in YHP Student Affiliate Coverage. Students enrolled in the Division of Special Registration as nondegree special students or visiting scholars are not eligible for YHP Basic Coverage but may enroll in the YHP Billed Associates Plan and pay a monthly premium. Associates must register for a minimum of one term within the first thirty days of affiliation with the University.

Students not eligible for YHP Basic Coverage may also use the services on a fee-for-service basis. Students who wish to be seen fee-for-service must enroll with the YHP Member Services Department. Enrollment applications for the YHP Student Affiliate Coverage, Billed Associates Plan, or Fee-for-Service Program are available from the YHP Member Services Department.

All students are welcome to use specialty and ancillary services at YUHS. Upon referral, YHP will cover the cost of these services if the student is a member of YHP Hospitalization/Specialty Coverage (see below). If the student has an alternate insurance plan, YHP will assist in submitting the claims for specialty and ancillary services to the other plan and will bill through the Office of Student Financial Services for noncovered charges and services.

Health Coverage Enrollment

The University also requires all students eligible for YHP Basic Coverage to have adequate hospital insurance coverage. Students may choose YHP Hospitalization/Specialty Coverage or elect to waive the plan if they have other hospitalization coverage, such as coverage through a spouse or parent. The waiver must be renewed annually, and it is the student's responsibility to confirm receipt of the waiver form by the University's deadlines noted below.

YHP HOSPITALIZATION/SPECIALTY COVERAGE

For a detailed explanation of this plan, see the *YHP Student Handbook*.

Students are automatically enrolled and charged a fee each term on their Student Financial Services bill for YHP Hospitalization/Specialty Coverage. Students with no break in coverage who are enrolled during both the fall and spring terms are billed each term and are covered from September 1 through August 31. For students entering Yale for the first time, readmitted students, and students returning from a leave of absence who have not been covered during their leave, YHP Hospitalization/Specialty Coverage begins on the day the dormitories officially open. A student who is enrolled for the fall term only is covered for services through January 31; a student enrolled for the spring term only is covered for services through August 31.

Waiving the YHP Hospitalization/Specialty Coverage: Students are permitted to waive YHP Hospitalization/Specialty Coverage by completing a waiver form that demonstrates proof of alternate coverage. Waiver forms are available from the YHP Member Services Department. It is the student's responsibility to report any changes in alternate insurance coverage to the YHP Member Services Department. Students are encouraged to review their present coverage and compare its benefits to those available under the YHP. The waiver form must be filed annually and must be received by September 15 for the full year or fall term or by January 31 for the spring term only.

Revoking the Waiver: Students who waive YHP Hospitalization/Specialty Coverage but later wish to be covered must complete and send a form voiding their waiver to the YHP Member Services Department by September 15 for the full year or fall term, or by January 31 for the spring term only. Students who wish to revoke their waiver during the term may do so, provided they show proof of loss of the alternate insurance plan and enroll within thirty days of the loss of this coverage. YHP premiums will not be prorated.

YHP STUDENT TWO-PERSON AND FAMILY PLANS

A student may enroll his or her lawfully married spouse or same-sex domestic partner and/or legally dependent child(ren) under the age of nineteen in one of two student dependent plans: the Two-Person Plan or the Student Family Plan. These plans include services described in both the YHP Basic Coverage and the YHP Hospitalization/Specialty Coverage. YHP Prescription Plus Coverage may be added at an additional cost. Coverage is not automatic and enrollment is by application. Applications are available from the YHP Member Services Department or can be downloaded from the YUHS Web site (www.yale.edu/uhs) and must be renewed annually. Applications must be received by September 15 for full-year or fall-term coverage, or by January 31 for spring-term coverage only.

YHP STUDENT AFFILIATE COVERAGE

Students on leave of absence or extended study or students paying less than half tuition may enroll in YHP Student Affiliate Coverage, which includes services described in both the YHP Basic and the YHP Hospitalization/Specialty Coverage. Prescription Plus Cov-

erage may also be added for an additional cost. Applications are available from the YHP Member Services Department or can be downloaded from the YUHS Web site (www.yale.edu/uhs) and must be received by September 15 for full-year or fall-term coverage, or by January 31 for spring-term coverage only.

YHP PRESCRIPTION PLUS COVERAGE

This plan has been designed for Yale students who purchase YHP Hospitalization/Specialty Coverage and student dependents who are enrolled in either the Two-Person Plan, the Student Family Plan, or Student Affiliate Coverage. YHP Prescription Plus Coverage provides protection for some types of medical expenses not covered under YHP Hospitalization/Specialty Coverage. Students are billed for this plan and may waive this coverage. The waiver form must be filed annually and must be received by September 15 for the full year or fall term or by January 31 for the spring term only. For a detailed explanation, please refer to the *YHP Student Handbook*.

Eligibility Changes

Withdrawal: A student who withdraws from the University during the first ten days of the term will be refunded the premium paid for YHP Hospitalization/Specialty Coverage and/or YHP Prescription Plus Coverage. The student will not be eligible for any YHP benefits, and the student's YHP membership will be terminated retroactive to the beginning of the term. The medical record will be reviewed, and any services rendered and/or claims paid will be billed to the student on a fee-for-service basis. At all other times, a student who withdraws from the University will be covered by YHP for thirty days following the date of withdrawal or to the last day of the term, whichever comes first. Premiums will not be prorated or refunded. Students who withdraw are not eligible to enroll in YHP Student Affiliate Coverage.

Leaves of Absence: Students who are granted leaves of absence are eligible to purchase YHP Student Affiliate Coverage during the term(s) of the leave. If the leave occurs during the term, YHP Hospitalization/Specialty Coverage will end on the date the leave is granted and students may enroll in YHP Student Affiliate Coverage. Students must enroll in Affiliate Coverage prior to the beginning of the term during which the leave is taken or within thirty days of the start of the leave. Coverage is not automatic and enrollment forms are available at the YHP Member Services Department or can be downloaded from the YUHS Web site (www.yale.edu/uhs).

Extended Study or Reduced Tuition: Students who are granted extended study status or pay less than half tuition are not eligible for YHP Hospitalization/Specialty Coverage and YHP Prescription Plus Coverage. They may purchase YHP Student Affiliate Coverage during the term(s) of extended study. This plan includes services described in both the YHP Basic and the YHP Hospitalization/Specialty Coverage. Coverage is not automatic and enrollment forms are available at the YHP Member Services Department or can be downloaded from the YUHS Web site (www.yale.edu/uhs). Students must complete an enrollment application for the plan prior to September 15 for the full year or fall term, or by January 31 for the spring term only.

For a full description of the services and benefits provided by YHP, please refer to the *YHP Student Handbook*, available from the YHP Member Services Department, 203.432.0246, 17 Hillhouse Avenue, PO Box 208237, New Haven CT 06520-8237.

Required Immunizations

Measles (Rubeola) and German Measles: All students who were born after December 31, 1956, are required to provide proof of immunization against measles (rubeola) and German measles (rubella). Connecticut state law requires two doses of measles vaccine. The first dose must have been given after January 1, 1969, *and* after the student's first birthday. The second dose must have been given after January 1, 1980. These doses must be at least 30 days apart. Connecticut state law requires proof of one dose of rubella vaccine administered after January 1, 1969, *and* after the student's first birthday. The law applies to all students unless they present (a) a certificate from a physician stating that such immunization is contraindicated, (b) a statement that such immunization would be contrary to the student's religious beliefs, or (c) documentation of a positive blood titer for measles and rubella.

Meningococcus (Meningitis): All students living in on-campus housing must be vaccinated against Meningococcal disease. The vaccine must have been received after January 1, 2001. Students who are not compliant with this law will not be permitted to register for classes or move into the dormitories for the fall term, 2005. Please note that the State of Connecticut does not require this vaccine for students who intend to reside off campus.

In addition to University requirements, all School of Medicine students must also meet immunization requirements of the various hospitals in which they will work. Yale–New Haven Hospital requires that, before beginning any clinical work, all students with negative serology be successfully vaccinated against hepatitis B and must ascertain that students are immune to polio, mumps, rubeola, rubella, and varicella. Those refusing the hepatitis B vaccine must do so in writing at the time of matriculation. Students must show evidence that they have received a tetanus toxoid or tetanus-diphtheria booster within the past ten years. They must also show evidence of a PPD within the past year, or a chest X-ray for individuals known to be PPD positive.

Note: Students who have not met these requirements prior to arrival at Yale University must receive the immunizations from YHP and will be charged accordingly.

Any students who will be traveling abroad should make an appointment in the Travel Clinic at YUHS at least six to eight weeks prior to departure. In addition, those who are working in areas where they might encounter blood or fluid exposure must contact the Student Medicine Department (432.0312) at YHP. Such students will be given a seven-day supply of antiretroviral medication at no charge. They will also receive instructions about how to handle possible exposure.

RESIDENCE AND DINING FACILITIES

Edward S. Harkness Dormitory and Apartments

Harkness Hall, located only steps away from the School of Medicine and Yale–New Haven Hospital, houses students from the School of Medicine, the School of Nursing, and the Epidemiology and Public Health and Physician Associate programs. Residents of Harkness Dormitory live in a secure building with recently renovated single rooms, and they have access to many amenities including computer network access in all units. Yale administrative offices occupy the first through third floors of the building. The great advantages of living in Harkness Hall are its close proximity to classes, and the opportunity it provides in bringing together students from the various medical-related fields in a relaxed social setting.

Accommodations include single rooms with sinks, a limited number of two-room suites, a popular dining hall, television lounges, kitchenettes, and other recreational rooms. All dormitory rooms are furnished, and all rooms must be single occupancy. Dormitory room rental rates are \$4,350 to \$6,050 during the 2005–2006 academic year (August 2005 to May 2006). One-bedroom apartments with living room, kitchenette, and bathroom are available for singles or couples. The 2005–2006 apartment rate is \$6,850 per academic year for streetside apartments, and \$7,050 per academic year for courtyard apartments. All rents include Ethernet hook-up, cable television, and all utilities except telephone. Apartments are furnished with basic furniture, although many students supplement the existing furniture with their own.

The first floor houses a dining and lounge area, known as Marigolds, which is open to the Yale community and provides both intimate and large gathering spaces for socializing, reading, watching television, and other activities. A Steinway baby-grand piano is also available for residents. The building contains limited resident storage including a bike storage area, an exercise/weight room, a billiard room, and a laundry room. The Class of 1958 Fitness Center, which opened during the 1999–2000 school year, contains a wide assortment of cardiovascular and weight training equipment. All medical, public health, physician associate, and nursing students are welcome to use this Center, where Student ID card scanners provide access. There is no fee for Harkness residents or for all medical and P.A. students; nursing and public health students are on a fee basis, except those residing in Harkness. All users are required to register for membership.

For information about Edward S. Harkness Memorial Hall, contact the Harkness housing office at 203.785.4686; or the Web site, <http://info.med.yale.edu/harkness>. For information about other Yale graduate residences, consult the Department of Graduate Housing's Web site at www.yale.edu/hronline/gho.

Dining Services

Marigolds, at the School of Medicine, is the popular student dining area and gathering place located in Edward S. Harkness Hall. Marigolds is open from 7:30 A.M. until 7 P.M., Monday through Friday, and it offers continental breakfast, lunch, and dinner. Dining

hours are shortened during summer and vacation periods. Faculty members, students, and staff are welcome to dine at the dining hall on an à la carte basis.

Those living in Harkness dormitory are required to participate in a meal plan. The rate for the 2005–2006 academic year is \$2,836 per year for dormitory residents. The meal plan is a debit-balance system allowing students to spend their board points any-time that the dining room is open. Pricing is à la carte. Apartment residents have no required meal plan, other than the off-campus dining plan requirement, which is explained below.

RESOURCE OFFICE ON DISABILITIES

The Resource Office on Disabilities facilitates accommodations for undergraduate and graduate and professional school students with disabilities who register with and have appropriate documentation on file in the Resource Office. Early planning is critical. Documentation may be submitted to the Resource Office even though a specific accommodation request is not anticipated at the time of registration. It is recommended that matriculating students in need of disability-related accommodations at Yale University contact the Resource Office by June 1. Returning students must contact the Resource Office at the beginning of each term to arrange for course and exam accommodations.

The Resource Office also provides assistance to students with temporary disabilities. General informational inquiries are welcome from students and members of the Yale community and from the public. The mailing address is Resource Office on Disabilities, Yale University, PO Box 208305, New Haven CT 06520-8305. The Resource Office is located in William L. Harkness Hall (WLH), Rooms 102 and 103. Access to the Resource Office is through the College Street entrance to WLH. Office hours are Monday through Friday, 8.30 A.M. to 4.30 P.M. Voice callers may reach staff at 203.432.2324; TTY/TDD callers at 203.432.8250. The Resource Office may also be reached by e-mail (judith.york@yale.edu) or through its Web site (www.yale.edu/rod).

OFFICE OF INTERNATIONAL STUDENTS AND SCHOLARS

The Office of International Students and Scholars (OISS) coordinates services and support to Yale's international students, faculty, staff, and their dependents. OISS assists members of the Yale international community with all matters of special concern to them and serves as a source of referral to other university offices and departments. OISS staff provide assistance with employment, immigration, personal and cultural adjustment, and family and financial matters, as well as serve as a source of general information about living at Yale and in New Haven. In addition, as Yale University's representative for immigration concerns, OISS provides information and assistance to students, staff, and faculty on how to obtain and maintain legal status in the United States. OISS issues the visa documents needed to request entry into the United States under Yale's immigration sponsorship and processes requests for extensions of authorized periods of stay in the United States, school transfers, and employment authorization. All international stu-

dents and scholars must register with OISS as soon as they arrive at Yale, at which time OISS will provide information about orientation activities for newly arrived students, scholars, and family members. OISS programs, like the monthly international coffee hours, daily English conversation groups, and receptions for newly arrived graduate students, postdocs, and visiting scholars, provide an opportunity to meet members of Yale's international community and become acquainted with the many resources of Yale University and New Haven.

OISS maintains an extensive Web site (www.oiss.yale.edu) with useful information for students and scholars prior to and upon arrival in New Haven. As U.S. immigration regulations are complex and change rather frequently, we urge international students and scholars to visit the office and check the Web site for the most recent updates.

International students, scholars, and their families and partners can connect with OISS and the international community at Yale by subscribing to the following e-mail lists. *OISS-L* is the OISS electronic newsletter for Yale's international community. *YaleInternational E-Group* is an interactive list through which over 2,000 international students and scholars connect to find roommates, rent apartments, sell cars and household goods, find companions, and keep each other informed about events in the area. Spouses and partners of international students and scholars will want to know about International Spouses and Partners at Yale (ISPY). The *ISPY E-Group* is an interactive list of over 300 members to connect spouses, partners, and families at Yale. To subscribe to any list, send a message to oiss@yale.edu.

The Office of International Students and Scholars, located at 246 Church Street, Suite 201, is open Monday through Friday from 8.30 A.M. to 5 P.M., except Tuesday, when the office is open from 10 A.M. to 5 P.M.

SECURITY AND TRANSPORTATION

As with most universities in urban settings, the security of people and property is an important concern at Yale. Security is available in the Medical Center twenty-four hours a day, seven days a week. Special buses and escort services are available during evening hours. In addition, there are a number of telephones strategically located throughout the Medical Center which are connected to the Yale Police Communication Center. They are visible on campus by "blue light" that hangs above them. Security can be reached at 785.5555.

There are a number of shuttles which provide transportation to a variety of locations and are free with a Yale ID. Schedules for all shuttles are available at the SHM Security Desk, 333 Cedar Street, and in the ID & Parking Office, SHM IE41. Information on CT Transit bus and Metro-North and Shoreline East train services is also available at the ID & Parking Office.

The Yale Daytime Shuttle provides transportation around the University on a fixed route Monday through Friday, 7.20 A.M. to 6 P.M. This bus is operated by the Yale Parking Services, 155 Whitney Avenue, 432.9790, www.yale.edu/parkingandtransit/.

The Mini-Bus/Night Shuttle follows a regular route and also responds to on-demand pickups from 6 P.M. to 7.30 A.M. The shuttle also transports to and from the train station upon request. For rides or information call 432.6330.

The Biomed Express provides shuttle service Monday through Friday between 333 Cedar Street and Lot 22 on Whitney Avenue. During commuter hours the bus runs directly to the train station and Transit Center Garage, and it will transport to the train station and Transit Center at other times upon request. This bus is operated by the ID & Parking Office. For schedule information, call 785.4202 or see the Web site, www.yale.edu/parkingandtransit/.

The VA Shuttle provides shuttle service every fifteen minutes from the VA Hospital in West Haven to 333 Cedar Street, 6 A.M. to 6 P.M., Monday through Friday. This shuttle also stops at Quigley Field. This bus is operated by the ID & Parking Office. For schedule information, call 785.4202.

The Y-NHH Shuttle provides service to the train station, Lee High School complex, and other Medical Center buildings Monday through Friday, 5.40 A.M. to 6 P.M. This bus is operated by the Yale–New Haven Hospital Parking Office, 25 Park Street (GEB22), 785.2622.

Medical Transportation

The Yale Transit Service provides special transportation services for disabled students and for students requiring a ride to and from the Yale Health Center, Monday through Friday, 8.30 A.M. to midnight. Call 432.2788.

Yale Police will transport faculty, staff, or students to the University Health Services Center or the Yale–New Haven Hospital emergency room in cases of sudden illness or injury if no other transportation is available and an ambulance is not required.

EPH Resources for Students

OFFICE OF STUDENT AFFAIRS

47 College Street, 785.6260
Anne Pistell, *Associate Dean*
Susan Whalen, *Director*

The Office of Student Affairs offers services and provides resources designed to enhance student life at EPH. The associate dean has primary responsibility for the M.P.H. program, represents the interests of students to the faculty, and participates in policy decisions for the school. Dean Pistell and Susan Whalen are available to discuss academic, extracurricular, or personal issues with EPH students. The Office of Student Affairs also coordinates orientation, Commencement, and other student programs, and serves as the administrative liaison with EPH student organizations. The goal of the office is to ensure that every EPH student is productively engaged in both academic and nonacademic aspects of school life.

OFFICE OF CAREER SERVICES

47 College Street, 785.2827
Christina Marks, *Director*

The Office of Career Services assists students in developing, managing, and implementing career plans and strategies through a number of programs and resources including the following:

Career Counseling

Students are encouraged to make an appointment to meet with career services staff for assistance with self-assessment, skills analysis, goal clarification, and developing effective job search strategies. Staff can also provide individual résumé critiques and mock interviewing to hone students' career development skills.

Professional Development Workshops

The Office of Career Services (OCS) offers a series of workshops designed to prepare the student to successfully handle the various steps in searching for employment. In addition, OCS offers information sessions for students interested in applying to medical school, law school, and doctoral programs.

Recruiting and Job Information

The Office of Career Services makes a strong effort to attract and respond to a variety of organizations seeking to hire public health professionals. The Yale Public Health Employment Resource, a Web-based recruitment tool, is a centralized source for posting job, internship, fellowship, and funding opportunities. Students can utilize this password-protected site to access and respond directly to opportunities, post their résumés,

and contact employers. Hard copy employment newsletters are also available in the Career Library, and a variety of employment Internet links are housed on the Career Library's computer.

Since each student has a unique career objective, students are expected to supplement on-campus recruitment with additional, individualized search efforts. The OCS staff is available to assist students in creating efficient job-search strategies.

Alumni Panel Discussions

Alumni panel discussions are scheduled throughout the year to provide students with an opportunity to meet and interact with EPH alumni working in a variety of public health settings. These events allow students to explore numerous organizations and the work taking place in them, and to network with individuals who may play a key role in internship and postgraduate job-search success.

Internship

The summer internship between the first and second year is an important learning experience providing students with an opportunity to explore or confirm a particular career interest. Students are expected to perform full-time work for ten to twelve weeks in a public health setting. Ultimately, it is each student's responsibility to secure an internship; however, OCS helps students identify internship opportunities through on-campus recruiting, job postings, and alumni and faculty contacts.

Alumni Network/Alumni Database

EPH has a strong alumni network, and our alumni routinely assist students in their job search and networking activities. OCS maintains a database of alumni who have volunteered to help students in career-related matters.

Career Resource Library

The Office of Career Services maintains a library with resources to help students during different phases of the job search process. The library contains career planning books and directories, job and internship postings, company information materials, and a computer that can be used for job search activities.

EPH LIBRARY

47 College Street, 785.2835
Matthew Wilcox, *Librarian*

The Epidemiology and Public Health Library has extensive collections in public health, biostatistics, health policy, environmental health, global health, and epidemiology of chronic and infectious diseases. The collection includes over 25,000 monographs, 350 current and bound journals by subscriptions, and a rapidly expanding array of electronic resources. Special collections include publications of the World Health Organization, the National Center for Health Statistics, and the United States Census. The his-

torical collection includes EPH theses and community projects, and early public health materials.

Throughout the year the EPH library staff offers classes and individual instruction in using electronic resources to EPH students. Topics include search techniques in a variety of databases, such as Medline, Popline, Occupational Safety and Health, Nexis, and others. Classes on using the Internet to access and manage public health information are also offered.

The EPH Library is part of the Yale library system and is linked to other libraries on campus by Orbis, the University's online catalogue. Students in the department also have privileges that include interlibrary loan services and access to the collections in Yale libraries. The Harvey Cushing/John Hay Whitney Medical Library, Seeley G. Mudd Government Document Library, Forestry & Environmental Studies Library, Lillian Goldman Library at Yale Law School, and Social Sciences Library have important print and electronic resources in their collections that address the multidisciplinary information needs of the students in public health.

Sterling Memorial Library, located on the main campus, is one of the largest libraries in the country. In addition to its many volumes, it carries over 300 foreign newspapers and microtext materials and approximately 130 domestic newspapers.

Seeley G. Mudd Library, near the main campus, houses the Documents Center and contains the comprehensive depository collection of U.S. Government Publications at Yale. It also contains the depository United Nations collection as well as Canadian Government (from 1968), Food & Agriculture Organization, and European Union publications.

Harvey Cushing/John Hay Whitney Medical Library, located in the School of Medicine, has extensive retrospective and current holdings of journals and manuals in biomedical research. The library subscribes to over 2,600 serial titles. The Medical and EPH libraries work together to provide access to biomedical and public health information to the Medical Center.

OFFICE OF THE REGISTRAR

47 College Street, 785.6260

Susan Whalen, *Registrar*

The registrar's office prepares course schedules, enrolls and registers students, maintains student records, and monitors academic progress. The following can be obtained from the registrar's office:

- Proof of student status. The registrar can provide a letter attesting to your student status, process loan deferment forms, and validate your ID card at the beginning of each term.
- Information on degree requirements.
- Transcripts. Copies of transcripts must be requested from the registrar's office. Transcript request forms are available in the registrar's office or are available online

at <http://info.med.yale.edu/eph/student/registrar.html>. Two days should be allowed for the processing of requests. The cost for an official transcript is \$5 per transcript. By law, the registrar may only release Yale EPH transcripts. Prior transcripts and recommendations included in a student's application to EPH must be obtained from their original source.

- Lockers. The registrar's office issues locker assignments.

OFFICE OF ALUMNI AND COMMUNITY AFFAIRS

60 College Street, 785.6245

Elaine Anderson, *Director*

Alumni Affairs

EPH has a very active alumni network that facilitates the participation of the more than 3,000 alumni in many ways. There is a formal alumni organization that holds its annual meeting each year in conjunction with the annual American Public Health Association (APHA) convention. This ensures geographic rotation of meetings nationally and active participation of many more graduates than would otherwise be possible.

Alumni weekend each year features a workshop and awards luncheon recognizing outstanding contributions of alumni to the field of public health and/or in service to EPH. There are also events for alumni each year to encourage networking with students, including a new student reception and a number of student/alumni receptions in key cities across the country.

In addition to participation in formal alumni events, graduates of EPH contribute both time (mentoring and advising) and contacts to students in their searches for internships and jobs. They also are essential to the practice curriculum by teaching, serving as preceptors, and providing applied research sites for projects and theses.

Community Relations

EPH actively encourages activities, both academic and voluntary, that forge linkages "to enhance health in human populations through organized community effort," reflecting the belief that research, instruction, and service move knowledge from creation, to dissemination, to application.

Through joint research activities, technical assistance, and service activities of both faculty and students, partnerships ultimately link innovative methods and research with application of measures to improve health within the community.

Medical Center Resources for Students

OFFICE OF GOVERNMENT AND COMMUNITY AFFAIRS

Myron Genel, M.D., *Associate Dean for Government and Community Affairs*

The Office of Government and Community Affairs facilitates communication among the medical school administration, faculty, and students, and a variety of governmental, community, and professional organizations such as the Association of American Medical Colleges, the National Association for Biomedical Research, Research!America, the American Medical Association, state and county medical societies, the Community Foundation for Greater New Haven, and the Hill Development Corporation. The office also helps promote medical and public health student volunteer efforts in New Haven and sponsors the monthly Health Policy Journal Club. Finally, the office is involved in activities relating to the use of animals in research and teaching and to the promotion of public scientific literacy, primarily through Connecticut United for Research Excellence.

OFFICE FOR INTERNATIONAL HEALTH

Michele Barry, M.D., *Director*

Linda Limauro, *Administrative Manager*

The Office for International Health was established to serve as a resource to assist Yale medical, epidemiology and public health, and nursing faculty and students who are interested in international health. The office seeks to enhance communication between departments and schools by preparing and maintaining a database of international health activities. The office serves as a clearinghouse for information about opportunities abroad for research and clinical training, and it also assists faculty and students in networking for overseas opportunities. The office has a bulletin board for overseas job opportunities and publishes a newsletter; both are designed to facilitate and coordinate exchange among faculty and students involved in overseas projects.

OFFICE OF MULTICULTURAL AFFAIRS

Forrester Lee, M.D., *Assistant Dean for Multicultural Affairs*

The Yale School of Medicine is committed to providing a supportive teaching and learning environment for all minorities in the Yale medical community. To this end, the Office of Multicultural Affairs (OMCA) organizes and administers numerous programs and initiatives designed to serve and assist minorities in their professional, social, and intellectual goals. The OMCA is actively involved in recruiting and ensuring the retention of underrepresented minority students, fellows, faculty, and housestaff into the fields of science and medicine. The OMCA also sponsors programs, lectures, and discussions in

order to provide the community with access to scholars, policymakers, and role models around the issues of race, ethnicity, and sexuality, as well as offering forums for members of the community to discuss these issues together. In addition, the OMCA proactively addresses the concerns and grievances of minorities on the medical campus.

OFFICE OF THE OMBUDSPERSON

Merle Waxman, M.A., *Ombudsperson*

The ombudsperson is a neutral complaint-handler who attempts to ensure that people are treated fairly and equitably. Any troublesome matter in the Yale School of Medicine community may be discussed with the ombudsperson. The ombudsperson has wide powers of inquiry and will refer matters to the proper person or office and, where appropriate, will assist in negotiations or in other aspects of problem solving. The ombudsperson's office supplements, but does not replace, the existing resources for conflict resolution and fair practice available at the Yale School of Medicine. The ombudsperson follows no prescribed sequence of steps and does not participate in any formal grievance process; the function is to listen, advise, suggest options, make recommendations, and investigate informally with the goal of conflict resolution; to consider all sides of an issue; to remain neutral and impartial; and to protect confidentiality. The office is independent of existing administrative structures and reports through the deputy dean to the dean of the School of Medicine.

OFFICE FOR WOMEN IN MEDICINE

Merle Waxman, M.A., *Director*

The Office for Women in Medicine (OWM) serves as a focal point for a variety of concerns, both general and specific, within the School of Medicine and the University. The missions of the office include: (1) initiating and developing programs to increase awareness and promote the academic growth of women in medicine and in health services; (2) providing professional counseling and psychological support relating to gender issues; (3) conceptualizing and planning School- and University-wide programs to anticipate and effectively deal with gender-related issues; (4) supervising Title IX compliance and interpreting federal policies and regulations for application by the School of Medicine; and (5) conceptualizing, initiating, and implementing workshops and programs to educate trainees, faculty, and administration regarding opportunities as well as regulations, restrictions, and legal responsibilities in the area of gender-related discrimination and well-being of women in medicine. The very existence of the OWM demonstrates Yale's strong commitment to women, and to the creation of a milieu where women at all levels (from beginning students to senior staff and faculty) can develop to full potential.

INTERDISCIPLINARY RESEARCH AND SPECIAL PROGRAMS

Yale Program on Aging

Mary E. Tinetti, M.D., *Director*

Sharon K. Inouye, M.P.H., M.D., *Co-Director*

The Yale Program on Aging encompasses a number of research initiatives including the Claude D. Pepper Older American Independence Center, the Yale Health and Aging Project, falls and injury prevention projects, and studies of disability, dementia, hospitalization, and patient preference. The program's philosophy is based on the premise that the greatest advancement in our understanding of normal aging, diseases associated with aging, and the effective and efficient use of health services by a growing elderly population, will come about when knowledge is integrated across sciences.

The Program on Aging has many opportunities for training at the predoctoral, postdoctoral, and junior faculty level. NIH predoctoral and postdoctoral training grants in aging and psychiatric epidemiology are available for M.D.s and Ph.D.s. Master's students have worked as paid and volunteer employees in several areas: study design; data management and analysis; field operations in community and hospital settings; and information dissemination.

For more information contact Becca Levy at 203.785.2869; e-mail, becca.levy@yale.edu.

Cancer Prevention and Control Research Program

Susan T. Mayne, Ph.D., *Director*

The Cancer Prevention and Control Research Program (CPCRP) at the Yale Cancer Center is a large and diverse program of research being done by more than twenty investigators. The ongoing research is designed to seek new knowledge that aids in the prevention of cancer, the detection of cancer in its earliest stages, and for those patients who already have cancer, ways to reduce the burden of cancer, improve survival, and reduce the risk of second cancers. The research is largely population-based, with the entire state of Connecticut serving as a population laboratory for the researchers.

The CPCRP builds on the scientific resources of the Yale Schools of Medicine and Nursing and the Department of Epidemiology and Public Health. Researchers in this program come from many different scientific disciplines including epidemiology and public health, biostatistics, cancer nursing, psychology, occupational medicine, nutrition, molecular virology, gynecology, and pediatrics. Program members collaborate with other YCC programs.

The program is enhanced by its link to the Connecticut Tumor Registry, the oldest population-based tumor registry in the United States and an NCI-funded SEER (Surveillance, Epidemiology, and End Results Program) site. The Connecticut Tumor Registry maintains data on all Connecticut residents diagnosed with cancer since 1935. In addition, researchers have access to the YCC Rapid Case Ascertainment Shared Resource, which identifies patients with newly diagnosed cancer throughout the state on a rapid basis, facilitating research projects.

General themes within the program and a sampling of relevant research projects follow:

1. *Lifestyle factors and genetics in the etiology of cancer*: Research topics within this general category include one or more of the following:
 - (a) nutrition, physical activity, obesity, and cancer;
 - (b) environmental factors and cancer;
 - (c) molecular/genetic factors in cancer;
 - (d) racial disparities and cancer;
 - (e) cancer biostatistics — methods, development, and application.
2. *Behavioral sciences/quality of life/cancer control*. Research topics within this general category include one or more of the following:
 - (a) behavioral research in cancer prevention/early detection;
 - (b) secondary prevention in cancer patients;
 - (c) symptom control/quality of life in cancer patients;
 - (d) health promotion in presence of co-morbidities;
 - (e) clinical trials to test advanced practice registered nurse role;
 - (f) end-of-life care for patients and families.

The program's major long-term goals are (1) to establish and maintain a center of excellence in research in cancer prevention and control in Connecticut; (2) to search systematically for new knowledge that aids in the prevention and control of cancer; (3) to integrate molecular and biochemical techniques with population-based epidemiologic investigations in cancer prevention and control; and (4) to maintain a prevention program spanning all phases of cancer prevention and control research, with an emphasis on investigations designed to capitalize on its unique resources, including the cancer registry.

For further information contact Susan Mayne at 203.785.6274; e-mail susan.mayne@yale.edu.

Center for Interdisciplinary Research on AIDS (CIRA)

Michael Merson, M.D., *Director*

Peter Salovey, Ph.D., *Co-Director*

The Center for Interdisciplinary Research on AIDS (CIRA), funded by the National Institute of Mental Health, provides support for the conduct of research aimed at the prevention of HIV infection and the reduction of the negative consequences of the disease in vulnerable and underserved populations nationally and abroad, as well as research on related legal and policy issues. It also houses several domestic and international training programs in HIV prevention and sponsors a number of different HIV-related conferences and seminar series.

Faculty representing thirteen disciplines from seven different graduate and professional schools at the University and scientists from The Institute for Community Research and the Hispanic Health Council participate in the center. CIRA-affiliated projects include research on prevention message framing, prevention interventions in

prenatal care settings, microbicides, social network based and structural interventions for drug users, interventions for coping with HIV and trauma, physician-delivered interventions with HIV-positive patients, syringe access issues, the public health impact and cost-effectiveness of HIV interventions, international HIV prevention issues, and risk in migrant workers, men of color who have sex with them, and drug-using women.

For more information contact Kim Blankenship at 203.764.4343; e-mail, kim.blankenship@yale.edu; or visit the CIRA Web site, <http://cira.med.yale.edu>.

Connecticut Women's Health Project

Jeannette R. Ickovics, PH.D., *Director*

Jessica Lewis, PH.D., *Associate Director*

The Connecticut Women's Health Project (CWHP) was established to conduct collaborative, community-based research among women with and at risk for HIV and other sexually transmitted diseases. In partnership with community health centers, hospital clinics, public health departments, and other community colleagues, our mission is to serve women and their families through research that informs health care and health policy. Current projects include (1) a randomized controlled trial of a behavioral intervention to reduce HIV/STD risk for young women in a group prenatal care setting; (2) an evaluation of New Haven Health Start, a program aimed at reducing infant mortality and adverse perinatal outcomes; (3) a prospective longitudinal study of pregnant and non-pregnant adolescent women and their risks of HIV, STDs, and repeat pregnancy. CWHP has been expanding its programs to include translational research and international research, most recently forming partnerships in Haiti and Pretoria, South Africa.

For more information contact Jessica Lewis at jessica.lewis@yale.edu.

Emerging Infections Program

Robert Heimer, PH.D., *Principal Investigator*

James I. Meek, M.P.H., *Associate Director*

The Connecticut Emerging Infections Program (EIP) is a collaborative effort between the State Department of Public Health and the Department of Epidemiology and Public Health at Yale University School of Medicine. The goals of the EIP are to assess the public health impact of emerging infections and to evaluate methods for their prevention and control. EIP projects include (1) Active Bacterial Core (ABC) surveillance: active population-based laboratory surveillance for invasive diseases caused by emerging, vaccine-preventable, and drug-resistant bacterial pathogens including Groups A and B streptococcus, *Haemophilus influenzae*, *Neisseria meningitidis*, and *Streptococcus pneumoniae*; (2) Foodborne Diseases Active Surveillance Network (FoodNet): active, population-based laboratory surveillance to monitor the incidence of foodborne and waterborne diseases for seven bacterial and two parasitic pathogens: *E. coli* O157 and other Shiga toxin-producing *E. coli* (STEC), *Campylobacter*, *Listeria*, *Salmonella*, *Shigella*, *Yersinia*, *Vibrio*, *Cryptosporidium*, and *Cyclospora*; (3) New Haven County Liver Study: population-based, prospective surveillance for newly diagnosed and existing cases of

chronic liver disease among residents of New Haven County; (4) Tickborne Disease Surveillance: active surveillance for human granulocytic ehrlichiosis and babesiosis in the twelve-town area surrounding Lyme, Connecticut to better define the incidence and epidemiology of these diseases in this area where Lyme disease was first described; (5) Unexplained Illness and Death Surveillance Program: identify and track unusual illnesses and deaths that were likely infectious in origin; (6) Bioterrorism Project: identify unexplained deaths of possible infectious etiology among non-severely immunocompromised Connecticut residents with a clinical presentation compatible with one or more selected Category A bioterrorism agents (anthrax, botulism, smallpox, or tularemia); (7) PCR for Diagnosis of Meningococcal Disease: determine the sensitivity and specificity of PCR for confirmation of invasive disease caused by *Neisseria meningitidis*; (8) Unexplained Diarrhea Surveillance: determine the burden and etiology of unexplained diarrhea among a sentinel group of patients in New Haven, Connecticut.

Center for Perinatal, Pediatric and Environmental Epidemiology

Michael B. Bracken, PH.D., M.P.H., *Co-Director*

Brian P. Leaderer, PH.D., M.P.H., *Co-Director*

Kathleen Belanger, PH.D., *Deputy Director*

Elizabeth Triche, PH.D., *Associate Director for Data Analysis and Management*

The Center for Perinatal, Pediatric and Environmental Epidemiology is a research facility that focuses on promoting the health of women and children through epidemiologic research investigating the impact of environmental, genetic, and clinical factors on pregnancy, birth, and childhood. Summer internships and thesis topics are the principal ways in which students become involved in the work of the center.

John B. Pierce Laboratory

Lawrence Marks, PH.D., *Director*

The John B. Pierce Laboratory, founded in 1933, was the first research institute devoted to the scientific study of how heating, ventilation, and sanitation influence health, comfort, and well-being. This novel endeavor has evolved in the succeeding years to encompass many physical, biological, and chemical aspects of the impact of the environment on basic biological and behavioral processes. The studies carried out by the Pierce Laboratory's internationally recognized staff of scientists have revealed a world in which a range of environmental stimuli — whether they are air contaminants, heating sources, or physical stresses; whether their effects are hazardous, benign, or still unknown — play a role in the regulation of cellular and organ system function.

Yale/WHO Collaborating Center on Health Promotion Policy and Research

Nora Groce, PH.D., *Director*

The Yale Collaborating Center provides services to WHO in the following areas:

1. **Projects.** Yale faculty provide expertise and guidance on designated WHO projects, working collaboratively with WHO staff on theoretical and methodological issues as well as on the collection and analysis of data and dissemination of findings through publications, conferences, and other channels.
2. **Training.** Yale faculty serve as consultants to WHO in three arenas: (a) training of WHO staff at the international, regional, and sub-regional levels through conferences, workshops, and symposia as well as by drafting widely circulated papers, reports, and training materials; (b) assistance with organization and running of Expert Meetings for WHO in areas of health public policy and health promotion; and (c) consultation for WHO Geneva and WHO regional and sub-regional offices in areas of research in which faculty have specific expertise (i.e., health promotion, chronic disease and tobacco, cross-cultural systems of health, disability).
3. **Internship Program.** The Yale Center regularly places students in internships and fellowships throughout the WHO system, both in Geneva, and at the regional level and sub-regional levels as well as with WHO programs such as the new European Office for Investment in Health Development in Venice.
4. **WHO Center Scholars.** The Collaborating Center, through the Global Health Division, regularly hosts WHO staff on the Yale campus as Center Fellows to work with Yale faculty and students on the development of new projects, on the analysis of WHO work currently under way, or on advancing theoretical and methodological approaches used by WHO. Center Fellows come for periods from several weeks to full terms and are able to call on the extensive academic resources of Yale University during their stay on campus.

For more information contact Nora Groce, at nora.groce@yale.edu.

Yale-Griffin Prevention Research Center

David L. Katz, M.D., M.P.H., *Director*

The Yale-Griffin Prevention Research Center (PRC), a collaboration of the Yale School of Medicine, the Department of Epidemiology and Public Health, and Griffin Hospital, is one of twenty-eight centers funded by the CDC. The research efforts of the PRC are intended to raise the standard of health and quality of life in the Lower Naugatuck Valley, and PRC has recently expanded its efforts statewide, focusing specifically in Bridgeport, Hartford, and New Haven. The research is intended to serve as a national model of comprehensive community-based disease prevention and health promotion.

Student Organizations and Committees

STUDENT GOVERNMENT

Epidemiology and Public Health Student Organization (EPHSO)

EPHSO is organized by EPH students for EPH students. EPHSO works to enhance the educational experience of each student at EPH by sponsoring educational and social activities, providing a forum for students' ideas and concerns, and acting as a liaison with the administration. Through EPHSO students get involved in many areas including the following:

- New student orientation.
- Lecture series, films, colloquia, and other programs of interest to the public health community.
- Recruitment of new students to EPH.
- Community service.
- Social events.
- Commencement activities.

EPHSO is headed by an Executive Committee consisting of a president, two vice-presidents, a treasurer, and a secretary. There are twelve divisional representatives; each division elects one first-year and one second-year student to act as a liaison between students and the faculty and administration. All EPHSO positions are filled by competitive election. The student representatives are elected at the start of the fall term, and the executive committee is elected at the end of the fall term.

MEDICAL SCHOOL COMMITTEES

Committee on the Well-Being of Students (CWBS)

This student-run committee, composed of faculty, staff, and students, addresses issues pertinent to the well-being of the students on the medical campus. The committee decides which student issues will be presented to the Medical School Council during the upcoming year. Relevant topics include counseling, student services, meal plans, and facilities such as Harkness Dormitory. CWBS sponsors elective courses for students in medical Spanish, American Sign Language, and other subjects/skills which students feel are valuable. The committee also does an extensive student survey investigating discrimination and harassment within the School of Medicine.

Medical School Council (MSC)

This faculty and administrative body meets every two weeks to discuss a wide variety of Medical Center issues. The meetings are open, held in the Beaumont room in SHM, and lunch is provided.

Medical Student Council

This council comprises the official student government for Yale Medical students. It is a forum for any and all student concerns, as well as a liaison between the student body and the School of Medicine administration. In order to become voting members, students who are not officers or representatives must attend a certain number of meetings each term. The council meets every other week at noon in the Beaumont Room.

Human Investigation Committee (HIC)

This committee reviews all research proposals at Yale that are conducted by investigators at the Medical Center and include research involving human subjects. No research on humans may be performed by Medical Center faculty, students, or staff without prior approval by HIC.

UNIVERSITY COMMITTEES

Graduate Health Advocate Program

Graduate representatives from each graduate and professional school within Yale University participate in the Graduate Health Advocate Program which is sponsored by the Yale University Health Services Health Education Office/AIDS Resource & Counseling Center. The Graduate Health Advocate Program links graduate students at Yale with the resources of the Health Education Office. The program sponsors events such as AIDS Awareness Month and World AIDS Day. In addition to HIV prevention, the program addresses other health issues such as smoking and substance abuse. Programs and activities reflect student concerns and student involvement. Types of activities include conducting ongoing prevention activities, informal/educational displays in school dining halls, and fund raising to benefit local AIDS charities.

Graduate and Professional Student Senate (GPSS)

Founded in 1971, the Graduate-Professional Student Senate (GPSS) fosters discussion and the exchange of ideas among the graduate and professional student population. All graduate and professional students are eligible to become senators. Senators are chosen each year by their respective schools. The GPSS meets every two weeks throughout the academic year, and meetings are open to the graduate and professional school community. Members serve on and make appointments to University committees, meet with University officials and Yale Corporation members, sponsor informational workshops and conferences, organize lectures and social events, and assist in community service events. Additionally, the GPSS oversees operation of the Graduate-Professional Student Center at Yale (GPSCY), at 203 York Street, which includes office and meeting spaces for graduate-professional student organizations, and the Gryphon's Pub. For more information, e-mail gpss@yale.edu or visit www.yale.edu/gpss.

SPECIAL INTEREST GROUPS

American College of Healthcare Executives (ACHE)

The American College of Healthcare Executives is an association of approximately 30,000 health care executives and students. In addition to the resources offered by ACHE to Student Associates, the Yale Health Management ACHE Student Chapter provides a variety of opportunities for the professional development of students interested in a health care management career. Networking events, tours, fund raising, and executive speakers are part of what our members organize throughout the year. Students also attend the ACHE Congress, which brings together approximately 4,000 health care professionals and students every year. Further general information is available at www.ache.org. For more information concerning the Yale Health Management Student Chapter, e-mail elinor.schwimmer@yale.edu or matthew.mcdonough@yale.edu.

Asian Americans in Yale Medicine (AAIYM)

AAIYM is an organization open to all students and faculty in the Yale health care community. Its goal is to address issues relevant to Asian-Americans in the medical field. The group's activities range from fostering mentor relationships between students and faculty to providing services to the Asian community in New Haven.

Epidemiology and Public Health Multicultural Student Organization (EPHMSO)

EPHMSO was founded in 2001 by a group of students interested in promoting professional development, academic scholarship, and networking opportunities for students of color and students who are interested in addressing health issues among communities of color. EPHMSO is committed to raising awareness of the diverse health needs of individuals around the world and acting as a forum to address those needs.

Journal of Health Policy, Law, and Ethics

The *Yale Journal of Health Policy, Law, and Ethics* is a biannual publication of the Yale Law School, School of Medicine, Epidemiology and Public Health, and School of Nursing. The *Journal* strives to provide a forum for interdisciplinary discussion on topics in health policy, health law, and biomedical ethics. It targets a broad and diverse readership of academicians, professionals, and students in medicine, law, and public health, as well as policy makers and legislators in health care.

Student National Medical Association (SNMA)

The Student National Medical Association was founded in 1964 as a support group for underrepresented minority (African American, Latino, and Native American) medical students. Over the years, it has developed into the largest minority medical student organization, representing more than 2,000 members. Yale is one of SNMA's most active chapters, with members active at both regional and national levels. SNMA not only provides academic and social support for minority students, but also opportunities for medical students to interact actively with minority communities.

Yale SNMA maintains close contact with other organizations representing minorities at Yale University; a special effort is made to reach out to students at the undergraduate level in the Academic Mentors for Programs in the Sciences, Black Students at Yale, and the Minority Pre-Medical Student Society at Yale.

Yale Environmental Health Association (YEHA)

The Yale Environmental Health Association provides a student voice for environmental health issues and gives students an opportunity to explore the connections between human health and the environment in which we live. YEHA does this through invited speakers, conferences, and other sponsored events.

Yale Health Professionals Christian Fellowship

The Yale Christian Health fellowship is an organization of Christian medical, nursing, graduate, and public health students and teachers that meets weekly. It is an opportunity to get together and discuss religious writings or concerns.

VOLUNTEER OPPORTUNITIES

Mahatma Gandhi said, “The best way to find yourself is to lose yourself in the service of others.” Students can follow this advice through the variety of EPH organized and sponsored volunteer opportunities throughout and beyond the Greater New Haven area. A brief description of each service project along with key contact information is listed below.

Advanced Strategies for Healthcare Access, Inc.

ASHA, a community outreach organization for the uninsured, provides application assistance for the state Medicaid health insurance plan (HUSKY), along with other information for Rx assistance and to make appointments at free or low-cost medical, dental, and vision providers. EPH volunteer opportunities include outreach events, follow-up referral, free care at Yale/prescription drug assistance, uninsured services referral, and direct work with the Yale Student-Run Free Clinic. Additional information about ASHA is available from Erica Jackson (erica.jackson@yale.edu).

Yale Student-Run Free Clinic

This fall will mark the beginning of the Yale Student-Run Free Clinic. A collaboration with Yale Public Health, Yale School of Medicine, Yale School of Nursing, and the Yale Physician Assistant program, the free clinic will provide a place for New Haven’s uninsured to receive primary care while also obtaining wellness education and access to social services. EPH volunteer opportunities include research, social services, health education, and front desk work. Additional information about the Yale Student-Run Free Clinic is available from Erica Jackson (erica.jackson@yale.edu) or Erica Warner (erica.warner@yale.edu).

Hillside Family Shelter

Hillside Family Shelter provides temporary housing for families who are homeless. The name “Hillside” was chosen for this shelter, both because it is located on the Hill side of New Haven, and because the goal of the program is to help the families served move up from homelessness and to reach the “top of the hill” and achieve self-sufficiency. Epidemiology and Public Health has adopted the Hillside Family Shelter, and EPH volunteer opportunities include general clean-up, painting, food drive sorting, and holiday event planning. EPH students are also encouraged to develop health promotion materials and conduct health education workshops for the shelter residents. More information is available on Hillside Family Shelter from Rebecca Latka (rebecca.latka@yale.edu).

Yale HealthCORE

Each year, Yale HealthCORE travels to La Isla de Mendez in El Salvador during spring break and conducts a series of public health projects. During the school year group members raise money for the trip and plan the logistics of the project initiatives. This past spring break, HealthCORE instructed children on dental hygiene, anti-smoking, and anti-gang peer pressure; donated medical and dental supplies to the village clinic; ran a series of focus groups on sexual health and practice; began a water treatment program; and conducted a randomized survey to determine which health concerns to address during this upcoming year’s visit. Additional information on HealthCORE is available from Elizabeth Bayne (elizabeth.bayne@yale.edu) and Emily Stasko (emily.stasko@yale.edu).

Kids Against Smoking

Kids Against Smoking is a fun, interactive, single-period classroom program for fourth-through sixth-graders that is designed to help prevent youth smoking. Such a program is vital because according to studies, while only 5 percent of fifth-graders use tobacco, by the time these children reach grade nine, 38 percent of them are smoking daily. Kids Against Smoking is a one-time workshop taught by both Yale Public Health and Medical School students. The program teaches students about the harmful effects of smoking and provides them with resources to go home and teach their family and friends. Additional information on Kids Against Smoking can be obtained from Lisa Bono Corredor (lisa.bonocorredor@yale.edu) and Nadia Abuzaineh (nadia.abuzaineh@yale.edu).

One-Time Service Events

A variety of one-time service events are also available throughout the year. Examples of one-time service events include the Annual Hunger and Homelessness Auction, AIDS Walk New Haven, Relay for Life, Race for the Cure, and Locks of Love. Information on these events is available during the school year. The EPHSO Community Service Committee will also plan division-specific service events during the academic year.

Additional information on community service is available through EPH and Yale University, from Erica Jackson (erica.jackson@yale.edu).

Appendix I: Thesis Guidelines

TYPES OF THESES

The following seven types of theses are acceptable:

Investigative Thesis

The investigative thesis takes an in-depth look at a specific health problem or topic, describing its public health importance and analyzing it from a disciplined perspective.

This thesis should include the following:

1. Definition of the problem;
2. Presentation of the study population and the methods by which data were acquired;
3. Analysis of the results;
4. Discussion of the implications of the results;
5. Recommendations.

Research Study Demonstrating Mastery of Methodology

This type of thesis requires sophisticated analysis and application. Consequently, students should be sure of their readiness to undertake it. This thesis should include the following:

1. Statement of methodological problem;
2. Comparison of available solutions, discussing the advantages and disadvantages of each;
3. Either (a) Choice and application of one of the available solutions, or
(b) Development of a new solution with discussion of the advantages and disadvantages of that solution.

Policy Thesis

In case study fashion, a policy thesis describes, analyzes, and interprets legislative activity, an event, a program, or a problem that led to the fashioning of health policy or had a policy consequence. This type of thesis usually considers the following:

1. Genesis of legislation, event, program or problem;
2. Review of the major participants;
3. Analysis of decision-making process and key strategies;
4. Description of setting, structure, and relationships;
5. Relation to conceptual framework;
6. Assessment of outcome for program or policy.

Management Thesis

The purpose of the management thesis is to prepare a rigorous and detailed analysis either to (1) recommend a decision/strategy in response to a current health management problem, or to (2) evaluate a decision/strategy that has already been chosen by a health organization or industry. Components of the thesis include the following:

1. Statement of the problem;
2. Statement of the objective;
3. Review and critique of relevant literature;
4. Articulation of strategic alternatives for addressing the stated problem in order to achieve the stated objective;
5. Comparative analysis of strategic alternatives;
6. Recommended strategic alternative with rationale;
7. Implementation plan for recommended action, if relevant;
8. Evaluation plan for assessing the degree to which the recommended action fulfills the stated objective.

Administrative Case Study

An administrative thesis defines, describes, analyzes, and interprets an actual administrative, problem-solving activity undertaken during a student's field work. A variety of standard case study formats may be employed. An administrative case study thesis should be planned in advance with appropriate techniques for systematic observation and recording of data as the project progresses. This thesis usually includes the following:

1. Definition of the problem;
2. Description of setting, structure, function, and relationships;
3. Relationship of student to problem (authority and accountability);
4. Procedural description (case description, process, outcome);
5. Analysis of events with reference to theory;
6. Assessment of the administrative solution.

Program Analysis, Evaluation, or Projection

This type of thesis examines either retrospectively or prospectively some particular health problem. It should include the following:

1. Definition of the problem that the program addresses;
2. Statement of program goals and objectives;
3. Specification of available data such as the following:
 - (a) Target population (characteristics, distribution, levels of protection, morbidity);
 - (b) Historical information, goals, politics;
 - (c) Resources and use of resources (acceptability, accessibility);
 - (d) Basis of intervention, data on knowledge, attitudes and practices;
 - (e) Cost analysis;
 - (f) Specification of further data needs.

Special Project

This type of thesis incorporates a product useful in the teaching or practice of public health such as a curriculum, syllabus, or course for a school program or on-the-job training; specific educational aids (perhaps a computer-assisted learning experience, a programmed instruction course, or a training manual); a movie, videotape, or slide package; a pamphlet for use in health information; a set of formal administrative guidelines to implement a law or administrative decision; or architectural plans for a health facility.

In addition to the product, the student must produce a written analysis that includes the following:

1. A rationale for the product and the anticipated audience/users;
2. Review of relevant literature;
3. Reasons for the selection of the chosen medium/method, including relevant theory;
4. Proposal for method to evaluate the product;
5. Discussion of the limitations of the product.

The special project may require review by the Committee on Academic Progress.

STYLE

No specific writing or bibliographic style is required for the thesis although conciseness and clarity of expression are essential. The EPH library maintains a Web page on thesis writing guidelines that can be found at <http://info.med.yale.edu/ephlibrary/thesis.html/>.

ORGANIZATION

The thesis must be assembled as follows:

- A. Title Page
- B. Permission to Copy
- C. A one-page, double-spaced abstract
The abstract is the final statement on the problem addressed by the thesis and should incorporate the most mature insights attained.
- D. Acknowledgments (if desired)
- E. Table of Contents
- F. List of Tables (if any)
- G. List of Figures (if any)
- H. Body of the Thesis

The following organization of the body of the thesis is recommended:

1. Introduction
 - a. Brief statement of specific objectives of the investigation
 - b. Statement of general problem addressed by the thesis
 - c. Elaboration of objectives and/or hypotheses, including the relation to the general problem
2. Review of Studies Relevant to the Problem

3. Research Design

- a. Specific research design and method
- b. Reasons for selection
- c. Method of analysis, including justification for statistical tests

4. Presentation and Analysis of Findings

This is the major portion of the thesis. The significance of the findings should be discussed and an assessment made of their applicability to current theory and practice. Analysis and discussion may be presented together in one chapter or separately in two chapters.

5. Conclusions

- a. Summary of findings
- b. Limitations of findings and other limitations of the study
- c. Conclusions based on the study
- d. Relevant recommendations for program development or further research

I. References

A list of the pertinent references consulted in preparing the thesis should be included. Any standard and consistent format for presentation of footnotes and references is acceptable.

J. Appendix or Appendices

MECHANICS

Typing, Paper, and Binding

Typing must be of good technical quality. Ten or twelve point type is recommended. If produced using a word-processing program, a laser printer must be used for output. With the exception of the Table of Contents, List of Tables, List of Figures and the References, the thesis must be typed doubled-spaced, one side only, and on 8½ x 11 inch paper. The left margin should be 1½ inches; the top, bottom, and side margins should be 1 inch. Page numbers should appear at the top, right-hand side of the page. **The school requires that two hard-bound copies of the thesis be submitted to the registrar by May 15.** The front cover must carry the imprinted title (which is limited to 60 characters), name of the author, and the year; the bound edge must carry the name of the author and the year. The cover should be dark blue or Yale blue.

PUBLICATION GUIDELINES

The thesis may be published independently. It also may be published under joint or multiple authorship if advisers or agency personnel have contributed significantly to the final product. Significance is interpreted to mean contributions such as expanding theory or techniques of analysis in ways beyond the usual role of an adviser. Supplying the database does not entitle the supplier to authorship. When students work on sponsored research, the thesis adviser and the student should sign a letter of agreement on funding, use of database or materials, deadlines, publication rights and authorship before work on the thesis begins.

Students are asked to include in the thesis a form that provides permission to reproduce. Refusal to give access to the thesis should be a rare occurrence in an academic community. Refusal to give access based on an agency's desire to keep the information classified is a loss of material to the academic community and may preclude use of that material for the M.P.H. thesis. A student who intends to use data from an agency work site should clear this with the agency before starting the thesis or project. Any possibility that access to thesis data may be restricted must be discussed with the associate dean for student affairs *before* the thesis work is started.

EXPENSES

Research expenses, typing, art work, and duplicating of the thesis *must be paid for by the student*. Special costs of production are the student's responsibility.

In some cases research expenses in preparation of the thesis such as laboratory and office supplies, related travel, and services essential to the collecting and processing of data, including computer time, are paid in whole or in part in one of the following ways:

1. Students supported on research or training grants that provide for such expenses may charge up to the budgeted amount with the approval of the principal investigator.
2. Students who are conducting research on a grant-supported research project under the guidance of the principal investigator may collect, process, and utilize the data at no cost to themselves with the approval of the principal investigator.

THESIS ADVISERS (READERS)

The type of thesis, choice of topic, and details of methodology are the joint responsibility of the student and the thesis adviser (first reader). The thesis adviser is determined by mutual consent between the reader and the student and may or may not be the student's academic adviser. The thesis adviser **must** have a faculty appointment in the Department of Epidemiology and Public Health.

An appropriate panel of readers consists of the thesis adviser (first reader) and another faculty member (second reader). The second reader must have a faculty appointment, preferably at Yale University but not necessarily at EPH. In rare circumstances a faculty member outside of Yale may serve as second reader. In this case the Committee on Academic Progress must review the C.V. of the non-Yale faculty member.

TIMELINE FOR M.P.H. THESIS

September — Divisional Meetings to review specific thesis requirements and timelines

October 14 — Thesis Reader Forms (signed by both readers) due to registrar

December 1 — Prospectus due to thesis adviser (first reader)

May 1 — Deadline for final grades from both readers

May 15 — Deadline for hard-bound copies. Students who have not submitted two hard-bound copies of the thesis to the registrar by May 15 will be charged a \$75 late fee.

THESIS PENDING (DELAYED SUBMISSION OF THESIS)

Students who have not received final grades from both readers by May 1 will be considered “thesis pending” and will receive a grade of “Incomplete” for the thesis. **Students who are “thesis pending” will not be allowed to participate in the Commencement ceremony and will not receive the M.P.H. degree until all requirements are complete.**

Students who are “thesis pending” are given one year to complete the thesis without penalty. At the end of the one-year period, the grade of “Incomplete” will be changed to a grade of “F” if the thesis has not been submitted. The student will be required to register for the thesis course and pay the per course tuition charge (\$2,700 per course) in order to submit the completed thesis. All M.P.H. degree requirements including the thesis must be completed within five years of the student’s date of matriculation.

DEAN’S PRIZE FOR OUTSTANDING THESIS

The Dean’s Prize for Outstanding Theses may be awarded to a small number (maximum of four) of students for extraordinary academic achievement on the M.P.H. thesis. Thesis advisers who recognize a student’s work as truly exceptional may nominate the student for this prize. Winners are announced at the EPH Commencement ceremony.

TITLE OF THESIS, DOUBLE-SPACED

By
Name of Student

A Thesis Presented to
The Faculty of the Department of Epidemiology and Public Health
Yale University

In Candidacy for the Degree of
Master of Public Health

2006

Permission for photocopying, microfilming, or computer electronic scanning of “Title of Thesis” for the purpose of individual scholarly consultation or reference is hereby granted by the author. This permission is not to be interpreted as affecting publication of this work or otherwise placing it in the public domain, and the author reserves all rights of ownership guaranteed under common law protection of unpublished manuscripts.

Signature of Author

Date

Appendix II: EPH Policies Regarding Personal and Academic Conduct

RIGHTS AND DUTIES OF STUDENTS, FACULTY,¹ AND STAFF² IN EPIDEMIOLOGY AND PUBLIC HEALTH

July 1996

The Department of Epidemiology and Public Health is a community of men and women devoted to the study and improvement of public health. Every member of this community has rights and responsibilities. EPH, the School of Medicine, and the University have adopted policies and procedures to particularize these rights and responsibilities. These policies and procedures include:

1. *The Human Relations Code of Conduct of the Yale University School of Medicine*;
2. *The Sexual Harassment Grievance Procedures of the Yale University School of Medicine* govern cases of sexual harassment against a student by another student(s), or by faculty, staff, or administration (available in the offices of the Dean of Public Health [and Chairman, Epidemiology and Public Health], Heads of Division, Director of Graduate Studies, Office of the Associate Dean and Registrar);
3. *The Dean's Procedure for Student Complaints* governs cases in which an EPH student has a complaint, other than a complaint of sexual harassment, against a member of the faculty or administration of EPH or the School of Medicine and therefore subject to discipline by the Dean of the School of Medicine. The document entitled *The Graduate School Procedure for Student Complaints*³ (available in the offices of the Dean of Public Health, Heads of Division, Director of Graduate Studies, Office of the Associate Dean and Registrar) will apply in such cases as the Dean's Procedure for Student Complaints in EPH with the exception that the Dean referred to in that document will be the Dean of the School of Medicine;
4. *The Provost's Procedure for Student Complaints*³ governs cases in which an EPH student's complaint is directed against a faculty member or administrator who is not affiliated with EPH or the School of Medicine and not subject to discipline by its dean (available in the offices of the Dean of Public Health, Heads of Division, Director of Graduate Studies, Office of the Associate Dean and Registrar);
5. *The President's Procedure for Addressing Student's Complaints of Racial or Ethnic Harassment*³ is available to any student who believes that he or she has been harassed on account of racial or ethnic origin by any member of the Yale community. A student may use no more than one of these procedures for redress of any single complaint (available in the offices of the Dean of Public Health, Heads of Division, Director of Graduate Studies, Office of the Associate Dean and Registrar).

¹ See Faculty Handbook.

² See Personnel Policies and Practice Manual for M&P staff; see Agreement Between Yale University and Local 34 Federation of University Employees for C&T staff.

³ See Yale University Graduate School Grievance Procedures (available in the offices of the Dean of Public Health, Heads of Division, Director of Graduate Studies, Office of the Associate Dean and Registrar).

HUMAN RELATIONS — CODE OF CONDUCT YALE UNIVERSITY SCHOOL OF MEDICINE

November 1991

Yale University School of Medicine is committed to the promotion of personal and professional development of all individuals in its community, and encourages dialogue that will foster the growth, well-being, and dignity of all its members. In pursuit of these goals, the school is dedicated to maintaining an environment which places the highest priority on collegial relationships, mutual respect, and sensitivity among its students, faculty, staff, and patients. An educational community functions best when there is civility and respect for the dignity and worth of each individual.

It must be ensured that our school is free from discrimination and acts of intolerance such as those based on race, gender, sexual orientation, religion, national origin, ancestry, age, or physical handicap. This commitment remains consonant with the obligation to protect open and wide-ranging public discourse. The principle of freedom of expression that might otherwise protect even the most offensive public speech does not protect, nor does it even encompass, a right to threaten the dignity and privacy of an individual. Such personally directed behavior will not be tolerated; it is antithetical to academic values, debilitates its victims, compromises the offenders, and undermines the University's fundamental commitment to individual freedom and respect for all its members. Furthermore, acts of intolerance may destroy the very atmosphere wherein freedom of expression is otherwise tolerated and cherished.

CODE OF ACADEMIC AND PERSONAL STUDENT CONDUCT

July 1996

Students are expected to adhere to a code of conduct that respects the values and integrity of the academic community. Students are also expected to obey local, state, and federal laws. Violations of law or this code of conduct may be grounds for disciplinary action by the Department of Epidemiology and Public Health.

The following forms of behavior are specifically prohibited:

1. Cheating on examinations, problem sets, and any other form of assignment, exercise, or test.
2. Falsification and/or fabrication of data, or misrepresentation in a report on research or other work, or of the way the work actually was done.
3. Plagiarism, that is, the failure in a dissertation, essay, or other written work properly to acknowledge ideas, research, or language taken from others.
4. Submission of the same paper in more than one course (either in the same or in different terms) without the explicit authorization of the appropriate instructors.
5. Unauthorized use of University services, equipment, or facilities, such as computer facilities, telephones, or letterhead.
6. Assault on, coercion of, or harassment of any member of the University community (including misuse of a teaching position to harass another student) for any

- reason, including harassment on the basis of race, ethnic origin, disability, sex, religion, or sexual orientation.
7. Disruption of University functions and business, including disruption of classes and meetings, blockage of entrances or exits to University buildings, or unauthorized occupation of any space on the Yale campus.
 8. Misuse, alteration, or fabrication of University credentials or documents, such as an identification card, a transcript, an academic record, a grade list (including grade lists submitted by Teaching Assistants), or other official University documents.
 9. Knowing misrepresentation or lying during a formal inquiry by Department or other University Officials.
 10. Knowing misrepresentation in applying for admission to other schools at Yale or other universities, or for financial aid or employment.
 11. Theft, misuse of funds, or willful damage of the property of the University or of members of the University.
 12. Trespassing on University property to which the student has not been granted access.
 13. Possession or use of explosives or weapons on University property; all firearms and ammunition must be registered and deposited with University Police.
 14. Improper use of fire alarms and extinguishers.
 15. Unlawful possession, use, or distribution of illicit drugs or alcohol on University property or as part of any University activity.
 16. Misuse of materials or facilities of any University library or laboratory.

The deliberate attempt to commit any of the above offenses is in itself an offense. Also, concerning these and other offenses, the use of alcohol or drugs shall not be considered a mitigating factor in judging the seriousness of the offense(s). Further, a student found guilty of a disciplinary offense(s) while under the influence of alcohol or drugs will be referred to the Substance Abuse Counselor at the University Health Services. Any record of such a visit(s) is confidential to the Substance Abuse Counselor and does not become a part of the student's academic record.

PENALTIES

July 1996

The following penalties are among those which may be recommended, singly or in combination, by the Disciplinary Committee and imposed by the Dean of Public Health.

1. Warning.
2. Letter of reprimand. The letter of reprimand shall remain in the student's file until the student graduates or withdraws.
3. Fine(s) and/or restitution.
4. Restriction. Denial of the use of certain University facilities or of the right to participate in certain activities or to exercise certain privileges.

5. Probation. The student is in official jeopardy. The commission of a serious offense while on probation normally will result in suspension or expulsion.
6. Suspension. Separation from the University for a stated period of time. A suspended student forfeits all privileges of enrollment, including residence, attendance at classes, participation in organized extracurricular activities, use of University libraries and other facilities. Suspension may require a petition for readmission. This penalty shall be recorded on the student's transcript.
7. Expulsion. Permanent separation from the University. This penalty shall be recorded on the student's transcript.

In addition to imposing these penalties for offenses subject to disciplinary action, the Dean of Public Health may refer students for prosecution, and students found guilty of unlawful possession, use, or distribution of illicit drugs on University property or as a part of any University activity may be required to complete an appropriate rehabilitation program.

DISCIPLINARY PROCEDURES FOR THE DEPARTMENT OF EPIDEMIOLOGY AND PUBLIC HEALTH

July 1996

COMPOSITION OF THE DISCIPLINARY COMMITTEE

The Disciplinary Committee shall be a standing committee of the Department of Epidemiology and Public Health (EPH) composed of the Director of Graduate Studies (Dr.P.H. and Ph.D. programs) when the accused is a doctoral student, the Associate Dean for Student Affairs when the accused is a student in the Master of Public Health (M.P.H.) program, eight faculty members, normally not more than one faculty member from any one Division or program of the School, and one M.P.H. student from each class. In addition, the Ombudsperson for the School of Medicine may be an ex-officio non-voting member. The Dean of Public Health shall select the faculty members of the Committee and shall appoint a faculty member of the Committee as its chairperson. Five members of the Committee shall constitute a quorum. The Committee shall make its decisions regarding its findings by majority vote of those members present, except as noted below with regard to the penalty of suspension or expulsion.

CONFLICT OF INTEREST

Any member of the Disciplinary Committee may voluntarily recuse himself/herself from a proceeding involving a student if in his/her judgment there is a potential conflict of interest regarding that student. The student accused of misconduct may challenge the appropriateness of any member of the Disciplinary Committee to act on matters concerning him/her for reasons of conflict of interest or possible bias, but such a challenge must be brought to the attention of the Chairperson of the Committee before the Committee has begun its hearing process. The Committee shall rule on any student request that a Committee member be recused, unless the request is that the Chairperson of the

Committee be recused, in which instance the Dean of Public Health shall rule on the request.

REPORTING MISCONDUCT

It is the expectation that any student, faculty member, or staff person who has evidence of a violation(s) of the EPH Code of Academic and Personal Student Conduct shall report it, whether or not that student, faculty member, or staff person was himself/herself a victim of such misconduct. Faculty and staff members shall report in writing all instances of student misconduct, including those which have been resolved informally, to the Dean of Public Health. Students shall report all instances of student misconduct either to the Dean of Public Health or to any faculty member who shall thereafter report it to the Dean of Public Health in writing. Reports of misconduct shall be in writing and provide information regarding the nature of the alleged misconduct and known witnesses concerning it. All records of complaints of misconduct against a student shall be maintained by the Dean of Public Health for the duration of the student's tenure at Yale.

INFORMING STUDENT CHARGED WITH MISCONDUCT

Upon receiving a report of student misconduct, the Dean of Public Health (or his/her designee) shall determine whether there appears to be some credible evidence to substantiate the report and whether the report, if substantiated, would constitute a violation. If the answer is no, no further action need be taken, except that the Dean of Public Health may notify the person who submitted the report. If the answer is yes, the Dean of Public Health or his/her designee shall notify the accused student in writing as to the substance of the report. The letter shall include a list of the members of the Disciplinary Committee and a copy of these procedures. The student shall, within a week, respond in writing to the misconduct report to the Dean of Public Health. The response shall be a statement of reasonable length which comments on the facts of the allegations of misconduct, the student's involvement in it, witnesses to the incident if any, and any other matter(s) that the student deems relevant. The student has the right to remain silent concerning the substance of the report and the duty to respond truthfully if he/she does choose to respond. The Dean of Public Health and the Disciplinary Committee are not to draw any negative inference(s) from silence. The student should be advised by the Dean of Public Health that his/her silence forfeits an opportunity to present his/her side of the matter before proceeding further.

REVIEW AND DISPOSITION OF REPORTS OF MISCONDUCT

Informal Disposition. Reports of misconduct normally will be reviewed and disposed of by a formal hearing before the Disciplinary Committee. However, in two categories of cases there may be informal procedures.

- A. The Dean of Public Health (or his/her designee) together with the Chairperson of the Disciplinary Committee may determine, based on the charges and the student's responses to them, that a particular case involves only a minor violation(s), i.e., a violation for which no penalty more severe than a warning or reprimand is

likely to be imposed, and may, with the consent of the student, proceed informally. Any decision made by the Dean of Public Health (or his/her designee) and the Chairperson of the Disciplinary Committee pursuant to this informal review process shall be forwarded to the Disciplinary Committee for prompt review. If a majority of the Committee is dissatisfied with the outcome of this informal procedure, the Committee may hold a formal hearing on the complaint, and if it finds that the complaint is substantiated, recommend such penalty as it determines to be appropriate, based on its findings, to the Dean of Public Health, including a more severe penalty than originally proposed.

- B. The student who has admitted the misconduct alleged in the report may request that the Dean of Public Health (or his/her designee) together with the Chairperson of the Disciplinary Committee proceed informally; however, the decision to grant this request shall be wholly within the discretion of the Dean of Public Health and the Chairperson of the Disciplinary Committee. Any decision made pursuant to this informal review process shall be forwarded to the Disciplinary Committee for prompt review. If a majority of the Committee is dissatisfied with the outcome of this informal procedure, the Committee may hold a formal hearing, and based on its findings, the Committee may recommend such penalty as it determines to be appropriate to the Dean of Public Health, including a more severe penalty than originally proposed.

If the student is dissatisfied with either informal procedure, he/she may request a hearing before the Committee. The Committee may hold a formal hearing, and based on its findings, the Committee may recommend such penalty as it determines to be appropriate to the Dean of Public Health, including a more severe penalty than originally proposed.

Formal review. Formal review of reports of student misconduct shall be by the full Disciplinary Committee upon initiation by the Dean of Public Health (or his/her designee).

Scheduling of hearing. The Chairperson of the Committee shall set the hearing date, time and place, and shall notify the individual charged, witnesses and all Committee members. All hearings shall be conducted confidentially.

Adviser for student. The student charged may select anyone to act as an adviser and attend the proceedings with him/her. The adviser is not an advocate, but rather a source of personal and moral support to the student. The adviser may assist the student in preparing for the hearing, accompany the student to Committee meetings, and counsel him/her during the meetings, but may not participate directly in the hearing. However, the adviser may make a brief verbal statement on the student's behalf if the student so requests. A faculty member shall be appointed by the Chairperson to act as an adviser for any student charged who requests such an appointment. If a student asks that an attorney serve as his/her adviser, the Chairperson of the Committee may request the presence of the University General Counsel or a representative of that office.

Conduct of hearing. The hearing usually will take place in a single continuous session, but the Disciplinary Committee may continue the hearing for additional sessions if appropriate. No less than 48 hours prior to the beginning of the hearing, the student and members of the Committee shall be provided opportunity to review, in the office of the Associate Dean for Student Affairs, a copy of the misconduct report, the student's written response to it, all other pertinent documents to be considered by the Committee, and a list of proposed witnesses. The student and members of the Committee may propose to the Chairperson additional witnesses to be called based on review of these documents. The Chairperson shall request the presence of all relevant witnesses at the hearing, and such witnesses shall be presented to the Committee one at a time. Except for Committee deliberations, the student charged has the right to be present at all meetings of the Committee. If the student does not exercise this right, usually the Committee will proceed in his/her absence.

The hearing shall commence with an explanation to the student of the charges made against him/her and the procedures to be followed. The student has the right to make a short opening statement. The Committee may direct questions to the student; the student has the right to remain silent, and the duty to testify truthfully if he/she does not choose to remain silent. The Committee is not to draw any negative inference(s) from that silence, but will advise the student that his/her silence forfeits an opportunity to present his/her side of the matter. The Chairperson may call such persons as witnesses as the Committee deems appropriate, and the accused student has the right to propose questions for such witnesses or, with permission of the Chairperson, to question the witnesses directly. The student also has the right to present such other persons as witnesses on his/her own behalf for questioning by the student and the Committee. All witnesses called to testify before the Committee have a duty to appear; all witnesses also have both the right to remain silent and the duty to testify truthfully if they do not choose to remain silent. The Chairperson may permit a witness who is the victim of the alleged misconduct to be accompanied by an adviser. The adviser is not an advocate, but rather a source of personal and moral support to the witness. The adviser may assist this witness in preparing for, accompany the witness to and counsel him/her during the hearing(s), but may not participate directly in the hearing. The accused student, as well as the adviser at the student's request, may present a concluding statement(s) after all witnesses have testified.

Deliberations. All Committee deliberations shall be conducted without the presence of the accused student or any other person not a member of the Committee. In making its deliberations, the Committee will consider only the evidence which is presented to it at the hearing(s). The student charged with misconduct will be presumed innocent unless the Committee finds by a majority vote that a preponderance of the evidence shows that the student committed the offenses charged. If the Committee finds the student guilty of the charge(s), it will recommend a penalty. The Committee's decision on the penalty will be by majority vote, except that any recommendation to suspend or expel a student shall be by a two-thirds vote of the Committee.

Committee report. At the conclusion of its hearing and deliberations, the Committee shall prepare a report for the Dean of Public Health which describes the charges, summarizes the testimony of all witnesses, presents the factual findings, and presents the conclusions. In a separate section of the report, the Committee shall state what action it recommends for the Dean of Public Health to take, including penalty or penalties. If there is substantial disagreement about summaries of testimonies, presentations of factual findings and conclusions, or recommendations, the Committee member(s) holding dissenting opinions may write a separate minority report to the Dean of Public Health. The Dean of Public Health will allow the complainant(s) and the student charged with misconduct to review the Committee's report which describes the charges, summarizes the testimony of all witnesses, and presents the factual findings and conclusions. The Dean of Public Health will accept the Committee's report and conclusions, unless the Dean believes that they are not fairly substantiated by the evidence presented to the Committee. The Dean of Public Health may accept, modify, or reject the Committee's recommendations, provided that if the Dean's decision is to modify or reject, he/she shall discuss the matter with the Committee and explain the reason(s) for doing so before speaking with the student. The Dean of Public Health shall notify the student in writing of his/her decision including any penalty to be imposed and notify as well the Committee and person(s) originally lodging the complaint(s).

Recording of proceedings. The Chairperson of the Committee shall designate a Committee member, or an appropriate member of the EPH Staff, to act as official Recorder of the hearing. In addition, usually the testimony presented to the Committee shall be tape-recorded and preserved until the case (including any appeal as provided for below) is concluded, after which the tapes will be destroyed. The official Recorder will keep written minutes which fully and faithfully summarize the proceedings, but these minutes will not include the substance (as opposed to the outcome) of the Committee's deliberations. Though subject to subpoena in connection with court proceedings, such records otherwise will be treated as confidential, kept in the custody of the Committee Chairperson, and used only in connection with Committee proceedings.

Time guidelines. The Committee shall conduct its hearings in a timely manner. Ordinarily, formal hearings will begin within two weeks of filing the complaint. Findings and recommendations generally will be made by the Committee within a month after formal hearings begin.

APPEAL

A student upon whom a disciplinary penalty has been imposed by the Dean of Public Health shall have the right to appeal this decision to the Dean of the School of Medicine. A written notice of appeal must be submitted to the Dean of the School of Medicine within 10 days after the decision of the Dean of Public Health has been received. The student shall have the right to review in the office of the Dean of Public Health all materials considered by the Committee, including Committee minutes and tape recordings of all testimonies, for purposes of preparing the appeal. The procedures by which such an appeal shall be considered and decided shall be as determined by the Dean of the School

of Medicine. Usually there will be no stay of any disciplinary penalty imposed by the Dean of Public Health pending the appeal. However, after review of the Committee's report to the Dean of Public Health, the Dean of the School of Medicine may impose a stay pending the outcome of the appeal.

CONFIDENTIALITY

All members of the Disciplinary Committee and all persons who appear before it shall treat as confidential, to the extent permitted by law, all information that is disclosed to them.

OTHER MATTERS RELATED TO DISCIPLINARY PROCEEDINGS

Emergency Action

In situations of emergency, the Dean of Public Health may summarily, with appropriate notice to the student and the Disciplinary Committee, impose emergency restrictions and/or suspension on a student if that student's conduct appears to pose serious threat of harm to the University or its members, provided that a hearing on that student's misconduct shall be held by the Disciplinary Committee within two working days of the emergency action. At the commencement of the hearing, the Committee shall determine whether or not a continuation of the restrictions/suspension is warranted during pendency of the proceedings. If it is not warranted, the Committee shall recommend that the restrictions/suspension be lifted; if it is warranted, the Committee shall recommend a continuation of the restrictions/suspensions. Then the Committee will proceed in the usual manner and without prejudice to conduct the formal hearing.

Complaints Relating to Matters before the Courts

When a complaint alleging a violation of the Code relates to a case that either will be or is in the process of adjudication by the state or federal courts, the Disciplinary Committee may address that complaint by one of the following procedures:

1. If in the judgment of the Committee there is sufficient information available to consider the complaint, the Committee may proceed in the manner described above.
2. The Committee may decide to defer its consideration of the complaint until after the matter has been adjudicated by the courts.
3. The student may request in writing that the Committee defer its consideration of the complaint and that he/she receive an administrative suspension. This option is intended for use only very rarely, only in situations in which the criminal charges are very serious and in which action by the Committee might irreparably prejudice the student's cause before the courts.

An administrative suspension means that the student voluntarily withdraws from the University with the understanding that he/she may re-enroll, but only after the complaint has been considered and resolved by the Committee. An administrative suspension is without prejudice to the review of the complaint against the student. The decision to recommend an administrative suspension to the Dean of Public Health and to grant or

deny it is wholly within the discretion of the Committee and the Dean of Public Health. The administrative suspension may remain in effect for no longer than one year, subject to an extension of the suspension upon written request by the student for a period not to exceed one additional year. An extension of an administrative suspension may not remain in effect longer than one month after the matter has been finally adjudicated by the courts or otherwise settled. When the complaint comes before the Committee after the period of the administrative suspension, the Committee will consider the complaint in the regular manner described above and without prejudice due to the fact that the student has received an administrative suspension. A court decision favorable to the student will not necessarily exonerate him/her from the charges made in the complaint before the Committee.

Maintaining the Status Quo

No degree will be awarded to and no transcript shall be released concerning a student about whom a disciplinary proceeding is pending until the full completion of that proceeding.

Refund of Charges

If a student voluntarily withdraws or is suspended, expelled, or otherwise required by the Committee and the dean of public health to withdraw for disciplinary reasons, the student will vacate University housing and submit his/her University identification card and University keys to the dean of public health immediately; the bursar will adjust student charges consistent with University and School guidelines.

Transcript Notations

Disciplinary actions resulting in suspensions or expulsions will be noted on the transcript, and other disciplinary actions may, at the discretion of the Disciplinary Committee and the dean of public health, be noted on the transcript as well.

Dissemination of Code Procedures

Copies of the Code for Academic and Personal Student Conduct and the Procedures of the Disciplinary Committee shall be provided to all students and shall be made available in the office of the associate dean for student affairs. In addition, a copy of the Code and Procedures shall be sent to any student charged with a violation of the Code.

The associate dean for student affairs shall keep a careful ongoing written record of complaints made under this Code, the Committee's findings, any mitigating factors, and the particular penalties assigned. The purpose of this record shall be to aid the Committee in future proceedings.

ACADEMIC DISHONESTY

(From the Yale College Executive Committee)

Academic dishonesty is a serious offense against the academic community; at Yale, as at most other universities, such dishonesty ordinarily results in suspension, i.e., required temporary withdrawal. (The normal duration of such suspension at Yale is two terms;

shorter or longer penalties of suspension, or even permanent expulsion, are possible, depending on the gravity of the offense and the offender's previous disciplinary record.)

For all the above reasons, it is important for every student to understand the standards of academic honesty assumed in a university and the consequent need to avoid dishonesty by acknowledging intellectual indebtedness. The provisions in the Undergraduate Regulations against cheating must be understood to include all forms of misrepresentation in academic work, including:

1. Submission of the same paper in more than one course without the explicit authorization of the appropriate instructors;
2. Cheating on tests, examinations, problem sets, or any other exercise;
3. Any form of plagiarism, especially failure in an essay to acknowledge ideas or language taken from others, and the submission of work prepared by another person;
4. Submission of a scientific research report that misrepresents in any way the work actually done.

A. *Multiple Submission.* You may not submit the same paper, or substantially the same paper, in more than one course. This applies whether or not the courses are being simultaneously taken. You may not submit in a course you are presently taking, a paper you wrote last term or last year, nor may you submit a single paper for two courses you are taking in the same term. In the latter case, if you think you have sound intellectual reasons for combining your work in two related courses, you must obtain the permission of both instructors before doing so. Similarly, to revise and extend a paper from an earlier course may well be academically appropriate; but before doing so you must seek explicit permission from your present instructor, who obviously cannot grant it without inspecting and approving your plans for adequate further work.

B. *Cheating on Examinations.* One form of cheating is either to copy answers from a nearby student, or to refer surreptitiously to notes or books. Though cheating of this kind may escape direct observation at the time, it can be detected by coincidences of language or argumentation, either with textbooks or with another student's examination, that emerge in the course of grading. Verbatim memorization of long stretches of text is a highly implausible excuse for such coincidences, and would be improper in any case, since you are expected in an examination to put ideas in your own words in order to show that you understand them.

Another form of cheating is to change one's answers on a returned examination and then request regrading. Students who submit examinations for regrading are warned that instructors in whose courses tests are permitted to be returned for a possible revision of a grade have usually taken steps to prevent changes from going undetected. It is your responsibility to make sure that you submit the examination exactly as it was; any alteration is culpable. The assertion that changes are merely "notes to yourself" will not be believed.

For take-home examinations, and for examinations for which the questions are distributed in advance, instructors should make the rules clear, and students should obey

them to the letter. If you are in any doubt as to the meaning of the instructions governing such exercises, you should seek explicit clarification from your instructor. The ordinary expectation is that you will prepare your answers by yourself; collaboration with others is acceptable only to the degree precisely and specifically described by the instructor. In any case, the answer you finally submit must represent your own understanding of the issues. If you think that it has been significantly influenced by consulting books or other people, you should say so, just as you would in a paper.

Problem sets in economics and mathematics, language-laboratory exercises, and other kinds of homework exercises, when submitted for a grade, though they may be discussed with others or worked on in common, must never be simply copied. Nor may someone else sign in for you at the language laboratory. The apparent slightness of an exercise is irrelevant; cheating is still cheating, on a quiz or homework as well as on a midterm test or on a final examination. Nor should you feel freer to cheat or plagiarize because a course is peripheral to your chief interests. Any dishonesty in any student's work is a serious invasion of the academic standards of a university.

C. *Plagiarism.* Plagiarism is the use of someone else's work, words, or ideas as if they were your own. Thus, most forms of cheating on examinations are plagiarism; but in ordinary academic parlance the word applies to papers rather than to examinations. Whereas all students know pretty well what they may or may not do on examinations, many are less sure concerning papers, and so it is conceivable that an honest student might plagiarize out of mere ignorance. It is therefore up to you to learn the standard practices of documentation. The Dartmouth College pamphlet, *Sources, Their Use and Acknowledgment*, has been given to you, and you are expected to have familiarized yourself carefully with its contents. Above all, you should realize that failure to acknowledge specific indebtedness to others is not simply a writing error but a form of theft — possibly unpremeditated, but not probably, and culpable in any case, since it is your responsibility to know and to indicate what is yours and what is not yours. The absence of a clear intent to deceive may mitigate an offense, but is certainly not likely to absolve it altogether. Read *Sources* carefully and thoroughly.

Some Further Points:

1. Take clear notes in which you keep your own thoughts distinct from those you derive from your reading, so that you do not inadvertently submit the words or ideas of others as your own.
2. Remember that you should acknowledge unpublished as well as published sources. This includes the work of other students and ideas that you may have derived from lectures and conversations.
3. Do not suppose that because your instructor is an expert in the field, he or she needs little or no documentation in your work. An essay must stand on its own and not as a form of conversation with the instructor. In preparing a paper, it will help you to assume a larger audience than your instructor; imagine everyone in your class, for example, reading your paper, this will give you a surer sense of what to document and what to consider common knowledge.

4. Mark and identify all quotations; give the source of translations; regularly acknowledge specific ideas; and give the source of facts not commonly known. If you are in doubt as to what may be “commonly known,” that is a signal that you should document it, even at the risk of appearing overcautious or simplistic.

Submission of an entire paper prepared by someone else is an especially egregious form of plagiarism, and is grounds for the imposition of a particularly serious penalty, even for expulsion from the University.

D. *Science Courses.* Many laboratory reports are constructed on some form of exercise in which observations are made and the results of these observations tabulated or processed in some manner. There are two violations of originality which can occur with this form of assignment:

1. *Falsification of Data.* The practice known as “dry-labbing,” constructing observations out of one’s head or borrowing the observations of others as if they were one’s own genuine data, is an offense of such gravity that it results in total excommunication from the community of scientists. In undergraduate work the comparable sanction is suspension.
2. *Cooperation in Treatment of Data.* Often a class is given a common set of data with an assignment to analyze the data and report the results. Sometimes when extensive routine analyses must be made, it is tempting for students to organize so that the total work load is divided among several students. The ordinary assumption must be that this type of cooperation, however sensible it may seem, is strictly illegal unless explicitly permitted by the instructor. The best policy is to ask at the time the assignment is made.

Submission of material, such as a chemical product, not actually obtained from an experiment performed by you is a flagrant act of cheating. Purchasing the product in the marketplace, “borrowing some product” from a classmate, or obtaining a sample surreptitiously from another laboratory all constitute serious offenses. In the preparation of products by synthesis, using “excess starting materials” to promote a better yield of products is also cheating.

There is ordinarily no prohibition against discussing your laboratory results with other students, and even revising your work accordingly, provided that you do the work of revising; the same is true for homework problem sets. Work of this kind, though in part it is a performance for a grade, is primarily meant to help you learn; and discussion of common work among students is a major form of learning. If you are in doubt, ask your instructor, or your conscience. Another reasonable course is to include a statement mentioning those with whom you discussed your work or whose laboratory results you consulted.

E. *Forms of Citation.* In many papers, most references can be made parenthetically in the text. This is not only common sense but standard practice. You should not equate honesty and thoroughness with pedantry or with a long string of footnotes that merely say

“ibid.” with a page number. Some basic rules of citation are given in *Sources*. The fullest guide to the standard of American publishers in all fields is *The University of Chicago Manual of Style*. A briefer manual, adequate for most student purposes, is the *MLA Handbook for Writers of Research Papers, Theses, and Dissertations*, a pamphlet available in local bookstores and in the library. Recently, many journals in the humanities have adopted a form of documentation long popular in the social and natural sciences, which dispenses with footnotes in favor of brief references by author and date (Jones, 1986) to an appended bibliography. The *MLA Handbook* describes this form in addition to more traditional forms used in publications in the humanities. When assigning reports or essays, instructors often designate some particular form of documentation; if not, adopt whatever standard form suits your paper best. Be consistent and sensible, and remember that deciding when to make a citation is vastly more important than deciding what particular form to use.

F. *A Last Note*. Finally, it should be reiterated that the prohibition of cheating and plagiarism is not meant to restrict either free discussion and exchange of ideas among students or studying the work of other scholars. Such activities are the very essence of education. Nor are the rules of citation meant to engender a dependent mentality. You are at Yale to study the work of others in order to learn to think for yourself. If you follow that principle, you will never cheat or plagiarize.

Within the Department of Epidemiology and Public Health, take-home exams and problem-sets are not unusual. Students should ask for instructions and instructors should be very clear about their conditions for writing the exam or homework, specifying whether the work is to be done independently or in collaboration with other students. An instructor bringing a charge of cheating against a student should be aware that this most serious charge needs substantial proof and that due process must be observed.

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Graduate Programs: Master of Laws (LL.M.), Doctor of the Science of Law (J.S.D.), Master of Studies in Law (M.S.L.). For additional information, please write to Graduate Programs, Yale Law

School, PO Box 208215, New Haven CT 06520-8215; telephone, 203.432.1696; e-mail, gradpro.law@yale.edu; Web site, www.law.yale.edu/

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For all other information relating to the Department of Epidemiology and Public Health, please telephone 203.785.6260, consult the Web site, <http://publichealth.yale.edu/>, or write to the Office of Student Affairs, Epidemiology and Public Health, 47 College Street, Suite 108, New Haven CT 06510.

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