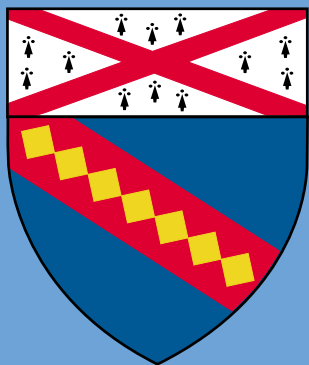


Epidemiology and Public Health

2001–2002



BULLETIN OF YALE UNIVERSITY

Series 97 Number II August 25, 2001

Bulletin of Yale University

Postmaster: Send address changes to Bulletin of Yale University,
PO Box 208227, New Haven CT 06520-8227

PO Box 208230, New Haven CT 06520-8230
Periodicals postage paid at New Haven, Connecticut

Issued sixteen times a year: one time a year in May, October, and November; two times a year in June and September; three times a year in July; six times a year in August

Managing Editor: Linda Koch Lorimer
Editor: David J. Baker
Editorial and Publishing Office: 175 Whitney Avenue, New Haven, Connecticut
Publication number (USPS 078-500)

The closing date for material in this bulletin was July 15, 2001.

The University reserves the right to withdraw or modify the courses of instruction or to change the instructors at any time.

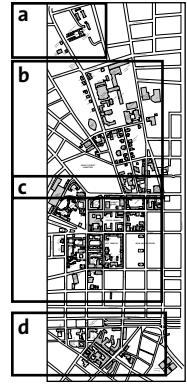
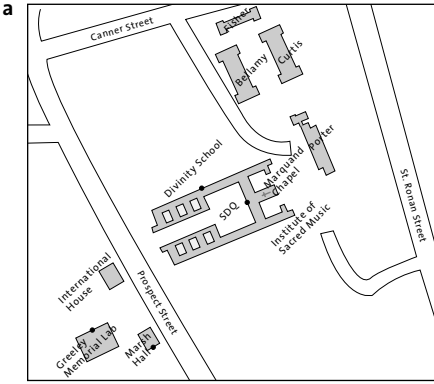
©2001 by Yale University. All rights reserved. The material in this bulletin may not be reproduced, in whole or in part, in any form, whether in print or electronic media, without written permission from Yale University.

Epidemiology
and Public Health
2001–2002

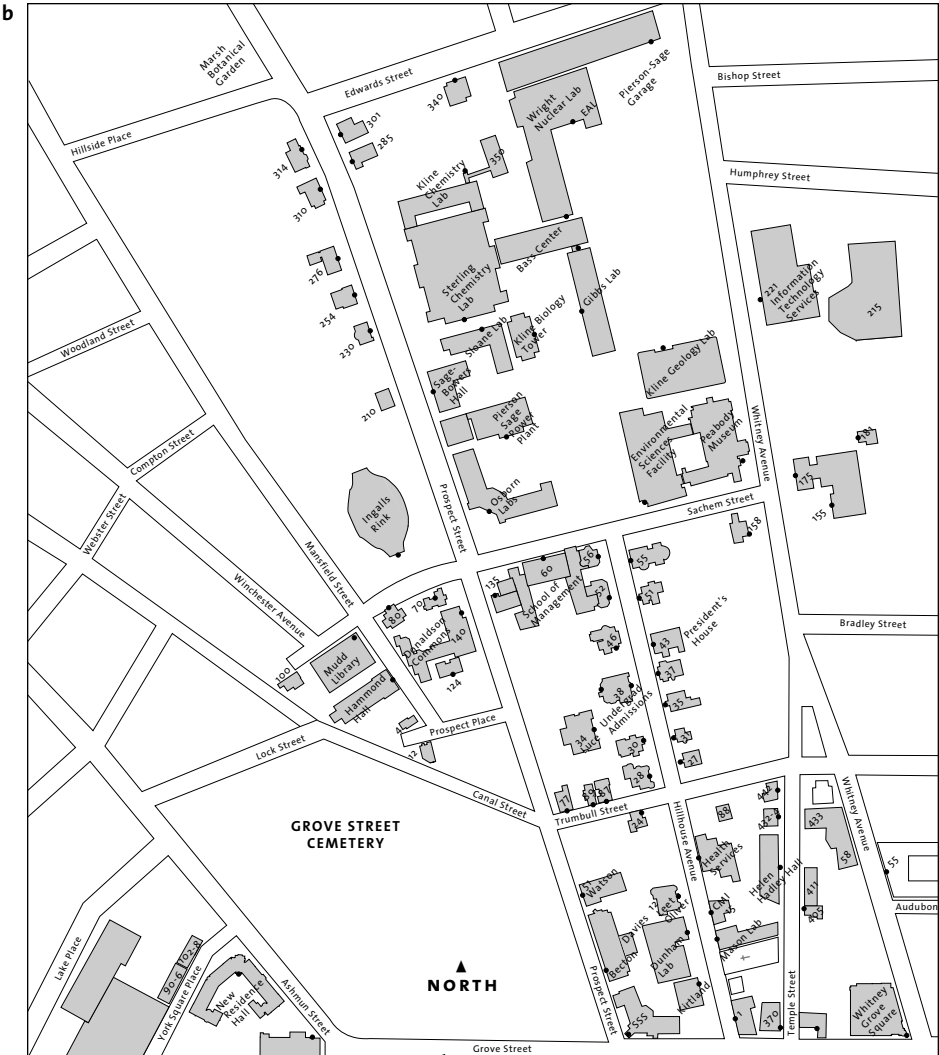
BULLETIN OF YALE UNIVERSITY

Series 97 Number 11 August 25, 2001

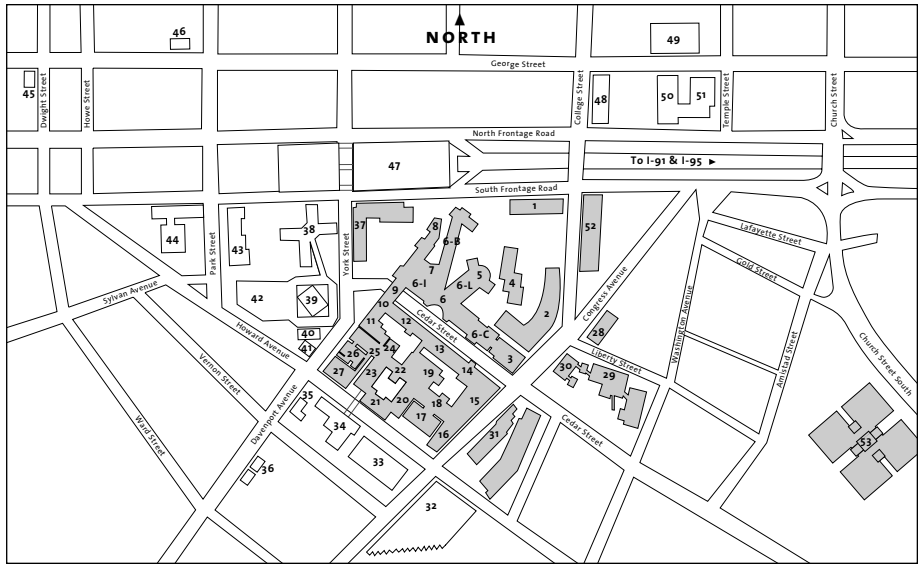
DIVINITY SCHOOL AREA



YALE UNIVERSITY—NORTH



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
28. John B. Pierce Laboratory, 290 Congress Ave.
29. Congress Place, 304 Cedar St.
30. 320 Congress Ave.
31. Congress Avenue Building, 350–382 Congress Ave.
32. 464 Congress Ave. and 726 Howard Ave.
33. **Howard Ave. Garage**
34. Yale Physicians Building, 800 Howard Ave.
35. 110 Davenport Ave. (YNHH Day Care Center)
36. 132–138 Davenport Ave. (Lead Program)
37. Edward S. Harkness Memorial Hall, 367 Cedar St.
38. East Pavilion, 20 York St. (Yale–New Haven Hospital Main Entrance)
39. South Pavilion, 20 York St.
40. **Emergency Services Parking**
41. **Children's Hospital Parking Garage**
42. Children's Hospital (West Pavilion)
43. Grace Building, 25 Park St.
44. Connecticut Mental Health Center
45. Ronald McDonald House, 501 George St.
46. 425 George St.
47. **Air Rights Parking Garage**
48. 135 College St.
49. New Haven Hotel, 229 George Street
50. **Temple Garage**
51. Temple Medical Center, 40–60 Temple St.
52. College Plaza, 47 College St.
53. Medical Center South, 100 Church St.
(Yale School of Nursing)

Contents

Academic and Grading Calendar	7
The President and Fellows of Yale University	8
The Officers of Yale University	9
Epidemiology and Public Health Administration and Faculty	10
Faculty Profiles	16
History of the Department	29
Academic Programs	31
Master of Public Health Degree	31
Master of Science Degree in Biostatistics	44
Doctoral Degrees	45
Course Descriptions	56
Biostatistics	56
Chronic Disease Epidemiology	59
Environmental Health Sciences	64
Epidemiology of Microbial Diseases	68
Global Health	72
Health Policy and Administration	75
Admissions	82
Master of Public Health Program	82
Master of Science Degree in Biostatistics	83
Doctoral Programs	84
Tuition, Expenses, and Financial Aid	85
Academic Policies	90
Faculty Advisers	90
Course Registrations	90
Withdrawal from a Course	90
Grading System	90
Academic Support	91
Academic Standards	91
Exemption from Required Courses	92
Change of Division	92
Dual Divisional Concentrations	92
Other Changes and Appeals in Educational Program	92
Administrative Policies	93
Student Records	93
Access to Records	93
Leave of Absence	93
Withdrawal from the M.P.H. Program	94
Human Investigation Safeguards	94
Additional Policies	94

University Resources and Services	95
Health Services	95
Residence and Dining Facilities	98
Resource Office on Disabilities	99
Office of International Students and Scholars	100
The International Center	101
Security and Transportation	101
EPH Resources for Students	103
Office of Student Affairs	103
Office of Career Services	103
EPH Library	105
Office of the Registrar	106
Office of Alumni and Community Affairs	106
Medical Center Resources for Students	108
Office of Government and Community Affairs	108
Office for International Health	108
Office of Multicultural Affairs	108
Office of the Ombudsperson	109
Office for Women in Medicine	109
Interdisciplinary Research and Special Programs	110
Student Organizations and Committees	114
Student Government	114
Departmental Committees	114
Medical School Committees	114
University Committees	115
Special Interest Groups	116
Volunteer Opportunities	116
Appendix I: Thesis Guidelines for Students Matriculated Prior to Sept. 2001	118
Appendix II: Thesis Guidelines for Students Matriculated Sept. 2001 and Later	124
Appendix III: EPH Policies Regarding Personal and Academic Conduct	127
The Work of Yale University	141

Academic and Grading Calendar

ACADEMIC CALENDAR

Fall Term 2001

Aug. 29	Wed.	Registration and orientation for incoming students begins at 9 A.M.
Aug. 31	Fri.	Orientation ends.
Sept. 4	Tues.	Registration for returning students begins at 8.30 A.M. <i>Fall-term classes begin.</i>
Sept. 11	Tues.	Course registrations deadline (late fee: \$25).
Oct. 19	Fri.	Final date for course withdrawal.
Nov. 21	Wed.	Thanksgiving recess begins, 6 P.M.
Nov. 26	Mon.	Thanksgiving recess ends, 8.30 A.M.
Dec. 3	Mon.	Reading period begins.
Dec. 7	Fri.	Reading period ends.
Dec. 10–14	Mon.–Fri.	Final examination week.
Dec. 14	Fri.	Fall term ends, 6 P.M.

Spring Term 2002

Jan. 7	Mon.	Registration begins, 8.30 A.M. <i>Spring-term classes begin.</i>
Jan. 14	Mon.	Martin Luther King Day; no classes.
Jan. 15	Tues.	Course registrations deadline (late fee: \$25).
Mar. 1	Fri.	Final date for course withdrawal.
Mar. 8	Fri.	Spring recess begins, 6 P.M.
Mar. 25	Mon.	Spring recess ends, 8.30 A.M.
Apr. 29	Mon.	Reading period begins.
May 3	Fri.	Reading period ends.
May 6–10	Mon.–Fri.	Final examination week.
May 7	Tues.	Student Research Day.
May 15	Wed.	<i>Final due date for M.P.H. thesis.</i>
May 27	Mon.	University Commencement.

GRADING CALENDAR 2001 – 2002

Dec. 20	Thu.	Fall-term grades for all students are due in the Registrar's Office.
May 15	Wed.	Grades for all graduating students are due in the Registrar's Office.
May 29	Wed.	Grades for all students are due in the Registrar's Office.

The President and Fellows of Yale University

President

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

Fellows

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

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

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

Roland Whitney Betts, B.A., J.D., *New York, New York (June 2005)*.

Benjamin Solomon Carson, Sr., B.A., M.D., *West Friendship, Maryland (June 2003)*.

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

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

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

David Richmond Gergen, B.A., LL.B., *McLean, Virginia (June 2002)*.

Holcombe Turner Green, Jr., B.A., LL.B., *Atlanta, Georgia*.

Linda Anne Mason, B.A., M.B.A., *Belmont, Massachusetts (June 2004)*.

The Rt. Rev. Victoria Matthews, B.A., M.DIV., *Edmonton, Alberta, Canada*.

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

John Ennis Pepper, Jr., B.A., M.A., *Cincinnati, Ohio*.

Kurt Lidell Schmoke, B.A., J.D., *Baltimore, Maryland*.

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

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

The Officers of Yale University

President

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

Provost

Alison Fettes Richard, M.A., PH.D.

Vice President and Secretary

Linda Koch Lorimer, B.A., J.D.

Vice President and General Counsel

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

Vice President for Development

Charles James Pagnam, B.A.

Vice President and Director of New Haven and State Affairs

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

Vice President for Finance and Administration

Robert Loren Culver, B.A., M.A., M.P.A.

Epidemiology and Public Health Administration and Faculty

ADMINISTRATION

- * Michael H. Merson, M.D., *Dean and Chairman*
Anne F. Pistell, M.A., M.B.A., *Associate Dean, Student Affairs*
- † Sarah M. Horwitz, PH.D., *Director of Graduate Studies (Fall 2001)*
Theodore R. Holford, PH.D., *Director of Graduate Studies (Spring 2002)*
David L. Katz, M.D., M.P.H., *Director of Medical Studies*
Roberta G. Marianella, *Administrator, Business Office*
Elaine R. Anderson, M.P.H., *Director of Alumni and Community Affairs*
Matthew Wilcox, M.L.S., *Librarian*
Susan V. Whalen, B.A., *Director of Student Affairs*
Maria Z. Dino, M.A., LL.B., *Director of Admissions*
Laurie Haskell, B.A., *Director of Career Services*
Lisa P. Rollins, B.A., *Executive Assistant to the Dean*
Karen Wellman, B.A., *Director of Financial Aid*

FACULTY

Biostatistics

- ^a Domenic V. Cicchetti, PH.D., *Senior Research Scientist*
Scott D. Clair, PH.D., *Research Affiliate*
Elizabeth B. Claus, M.D., PH.D., *Associate Professor*
Joel Dubin, PH.D., *Assistant Professor*
Birol Emir, PH.D., *Assistant Professor (Adjunct)*
Gene Fisch, PH.D., *Senior Research Scientist*
Ralitza Gueorguieva, PH.D., *Associate Research Scientist*
Pamela Hartigan, M.P.H., PH.D., *Associate Professor (Adjunct)*
Theodore R. Holford, PH.D., *Professor*
Haiqun Lin, M.D., PH.D., *Assistant Professor*
Robert W. Makuch, PH.D., *Professor*
Peter N. Peduzzi, PH.D., *Associate 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., *Associate Professor*
Hongyu Zhao, PH.D., *Associate Professor*

Chronic Disease Epidemiology

- Susan G. Austin, PH.D., *Lecturer*
Dorothy I. Baker, PH.D., *Research Scientist*
Kathleen D. Belanger, PH.D., *Research Scientist*

- Marianne Berwick, PH.D., *Research Affiliate*
Edward A. Bortnichak, PH.D., *Lecturer*
Michael B. Bracken, M.P.H., PH.D., *Professor*
- ^b Lawrence M. Brass, M.D., *Professor*
- ^c Kelly D. Brownell, PH.D., *Professor*
Brenda Cartmel, PH.D., *Research Scientist*
Peter A. Charpentier, M.P.H., *Lecturer*
Mary G. McCrea Curnen, M.D., DR.T.M., DR.P.H., *Clinical Professor*
- ^d Vincent T. DeVita, Jr., M.D., *Professor*
Lisa C. Dierker, PH.D., *Lecturer*
Robert D. Dubrow, M.D., PH.D., *Lecturer*
- ^d Alvan R. Feinstein, M.D., *Professor*
William T. Gallo, PH.D., *Associate Research Scientist*
- ^d Ralph I. Horwitz, M.D., *Professor*
- ‡ Jeannette R. Ickovics, PH.D., *Associate Professor*
Melinda L. Irwin, PH.D., *Assistant Professor*
Beth A. Jones, M.P.H., PH.D., *Assistant Professor*
Stanislav V. Kasl, PH.D., *Professor*
Ralph V. Katz, D.M.D., M.P.H., PH.D., *Lecturer*
Becca R. Levy, PH.D., *Assistant Professor*
Judith H. Lichtman, M.P.H., PH.D., *Assistant Professor*
- * Susan T. Mayne, PH.D., *Associate Professor*
- ^e Ruth McCorkle, PH.D., *Professor*
- * Kathleen R. Merikangas, PH.D., *Professor*
Douglas E. Morse, PH.D., S.M., D.D.S., *Lecturer*
Lloyd M. Mueller, PH.D., *Lecturer*
Jewel M. Mullen, M.D., M.P.H., *Lecturer*
Adrian M. Ostfeld, M.D., *Professor Emeritus*
David G. Pendry, D.D.S., PH.D., *Lecturer*
- ⁱ Holly G. Prigerson, PH.D., *Associate Professor*
Harvey A. Risch, M.D., PH.D., *Associate Professor*
Julie T. Robison, PH.D., *Research Affiliate*
Patricia H. Rosenberger, PH.D., *Associate Research Scientist*
- ^c Peter Salovey, PH.D., *Professor*
Amy E. Sampson, PH.D., *Research Affiliate*
Bernard P. Schachtel, M.D., *Lecturer*
John C. Sinclair, M.D., *Professor (Adjunct)*
Joel D. Swendson, PH.D., *Lecturer*
- ^d Mary E. Tinetti, M.D., *Professor*
Roni B. Tower, PH.D., *Research Affiliate*
Elizabeth W. Triche, PH.D., *Associate Research Scientist*
L. Viola Vaccarino, M.D., PH.D., *Research Affiliate*
Marianne U. Yood, PH.D., *Associate Research Scientist*
Herbert Yu, M.D., M.S.C., PH.D., *Assistant Professor*

Environmental Health Sciences

- Andrea L. Boissevain, M.P.H., *Lecturer*
d Jonathan B. Borak, M.D., *Associate Clinical Professor*
Priscilla F. Canny, PH.D., *Lecturer*
d Mark R. Cullen, M.D., *Professor*
Dorothy J. Cunningham, PH.D., *Research Affiliate*
f Linda C. Degutis, DR.P.H., *Associate Professor*
Loretta DiPietro, M.P.H., PH.D., *Associate Professor*
James S. Douglas, PH.D., *Senior Research Scientist*
Arthur B. DuBois, M.D., *Professor*
Jan D. Dunn, PH.D., *Lecturer*
Elan J. Gandsman, PH.D., *Lecturer*
Janneane F. Gent, PH.D., *Associate Research Scientist*
Gary L. Ginsberg, PH.D., *Lecturer*
Carolyn H. Grantham-Millman, M.P.H., *Lecturer*
Brian P. Leaderer, PH.D., *Professor*
Gary W. Mack, PH.D., *Associate Professor*
Lawrence E. Marks, PH.D., *Professor*
g William E. Reifsnnyder, PH.D., *Professor Emeritus*
d Mark Russi, M.D., M.P.H., *Associate Professor*
d Judith A. Sparer, M.SC.E., *Lecturer*
Nina S. Stachenfeld, PH.D., *Assistant Professor*
John T. Stitt, PH.D., *Professor*
Jan A. J. Stolwijk, PH.D., *Professor Emeritus*
Meredith H. Stowe, PH.D., *Lecturer*
Joel A. Wasserman, M.P.H., *Lecturer*
John P. Wise, PH.D., *Assistant Professor*
Tongzhang Zheng, B.MED., SC.D., SC.M., *Associate Professor*

Epidemiology of Microbial Diseases

- Nadia Abdala, PH.D., D.V.M., *Associate Research Scientist*
Thomas H. G. Aitken, PH.D., *Research Affiliate*
* Serap Aksoy, PH.D., *Associate Professor*
Louis Alexander, PH.D., *Assistant Professor*
John F. Anderson, PH.D., *Research Affiliate*
h Warren A. Andiman, M.D., *Professor*
Theodore G. Andreadis, PH.D., *Lecturer*
Martine Y. K. Armstrong, M.D., *Senior Research Scientist Emeritus*
h Robert S. Baltimore, M.D., *Professor*
Lorenza Beati, M.D., PH.D., *Associate Research Scientist*
Debra E. Bessen, PH.D., *Research Scientist*
Francis L. Black, PH.D., *Professor Emeritus*
Kim M. Blankenship, PH.D., *Associate Research Scientist*

- ^h Michael Cappello, M.D., *Associate Professor*
 Matthew L. Cartter, M.D., *Assistant Clinical Professor*
 Jordi Casals-Ariet, M.D., *Professor Emeritus*
 Maria Colmenares, Ph.D., *Associate Research Scientist*
 Susan R. Compton, Ph.D., *Lecturer*
- ^d Louise M. Dembry, M.D., *Associate Professor*
 Marketa S. Derdakova, D.V.M., *Visiting Research Scientist*
 Ravi V. Durvasula, M.D., *Assistant Clinical Professor*
- ^d Erol Fikrig, M.D., *Associate Professor*
 Terry Fiorentino, M.S., M.P.H., *Lecturer*
 Durland Fish, Ph.D., *Associate Professor*
- ^d Gerald H. Friedland, M.D., *Professor*
 Lauretta E. Grau, Ph.D., *Associate Research Scientist*
 James L. Hadler, M.D., M.P.H., *Assistant Clinical Professor*
- * Robert Heimer, Ph.D., *Associate Professor*
- ^d Walter J. Hierholzer, Jr., M.D., *Professor Emeritus*
 Virginia H. Hodgkinson, Ph.D., *Research Affiliate*
 Akiko Iwasaki, Ph.D., *Assistant Professor*
- ^d Keith A. Joiner, M.D., *Professor*
 Kalipada Kar, Ph.D., M.Sc., *Visiting Research Scientist*
 Kaveh Khoshnood, M.P.H., Ph.D., *Assistant Professor*
 William L. Krinsky, M.D., Ph.D., *Associate Clinical Professor*
 Werner Lesslauer, M.D., Ph.D., *Visiting Adjunct Professor*
 Louis A. Magnarelli, Ph.D., *Research Affiliate*
 Ruthanne Marcus, M.P.H., *Lecturer*
 Diane McMahon-Pratt, Ph.D., *Professor*
- ^h I. George Miller, M.D., *Professor*
 Leonard E. Munstermann, Ph.D., *Research Scientist*
 James C. Niederman, M.D., *Clinical Professor*
 Edward M. Opton, Ph.D., *Research Affiliate*
 Curtis L. Patton, Ph.D., *Professor*
- ^d Anuradha Ray, Ph.D., *Associate Professor*
 Nancy H. Ruddle, Ph.D., *Professor*
- ^h Eugene D. Shapiro, M.D., *Professor*
 Robert E. Shope, M.D., *Professor Emeritus*
 Ranjiani K. Sundarum, Ph.D., *Associate Research Scientist*
- ^d Christian Tschudi, Ph.D., *Assistant Professor*
 Gregory H. Tignor, D.Sc., *Associate Professor Emeritus*
 Liangbiao Zheng, Ph.D., *Assistant Professor*

Global Health

- George J. Andreopoulos, LL.B., Ph.D., *Lecturer*
- ^d Michele Barry, M.D., *Professor*

Kent Buse, PH.D., M.S., *Assistant Professor*

Anne-Marie Foltz, M.P.H., PH.D., *Lecturer*

† Nora E. Groce, PH.D., *Associate Professor*

Debbie Humphries, PH.D., *Lecturer*

James F. Jekel, M.D., M.P.H., *Professor Emeritus*

Ilona S. Kickbusch, PH.D., *Professor*

Kelley Lee, PH.D., *Lecturer*

Lowell S. Levin, ED.D., M.P.H., *Professor Emeritus*

Eric W. Mood, M.P.H., *Lecturer*

Kim-Thu C. Pham, M.D., M.P.H., *Assistant Clinical Professor*

Scott C. Ratzan, M.D., M.P.A., M.A., *Lecturer*

William E. Watkins, PH.D., *Lecturer*

Erio Ziglio, PH.D., *Lecturer*

Health Policy and Administration

Susan S. Addiss, M.P.H., M.U.S., *Lecturer*

Stephen Allegretto, M.P.H., *Lecturer*

Elaine Anderson, M.P.A., M.P.H., *Lecturer*

Irwin M. Birnbaum, J.D., *Lecturer*

Elizabeth H. Bradley, M.B.A., PH.D., *Assistant Professor*

David S. Bruce, B.A., *Lecturer*

Richard B. Burford, Jr., M.P.H., *Lecturer*

Susan H. Busch, PH.D., *Assistant Professor*

Gayle L. Capozzalo, M.S.P.H., *Lecturer*

Henry Chauncey, Jr., B.A., *Lecturer*

Katrina H. Clark, M.P.H., *Lecturer*

^d William B. Crede, M.D., *Associate Clinical Professor*

John G. Culhane, J.D., *Lecturer*

^e Donna K. Diers, M.S.N., *Lecturer*

Henry G. Dove, PH.D., *Lecturer*

ⁱ Benjamin G. Druss, M.D., M.P.H., *Assistant Professor*

Tracy A. Falba, PH.D., *Associate Research Scientist*

ⁱ Stephen Fleck, M.D., *Professor Emeritus*

Joxel Garcia, M.D., M.B.A., *Lecturer*

Shelley G. Geballe, J.D., M.P.H., *Lecturer*

Bradford H. Gray, PH.D., *Lecturer*

Michael K. Gusmano, PH.D., *Lecturer*

ⁱ Rani A. Hoff, PH.D., M.P.H., *Assistant Professor*

† Sarah M. Horwitz, PH.D., M.P.H., *Associate Professor*

Bruce Jennings, M.A., *Lecturer*

ⁱ Mireia Jofre-Bonet, M.S., PH.D., *Associate Research Scientist*

‡ Edward H. Kaplan, PH.D., *Professor*

David L. Katz, M.D., M.P.H., *Associate Clinical Professor*

- ^d Ruth J. Katz, J.D., M.P.H., *Assistant Professor*
Susan L. Katz, J.D., *Lecturer*
- ^h David A. Kessler, J.D., M.D., *Professor*
William L. Kissick, M.D., M.P.H., DR.P.H., *Visiting Professor*
Karl S. Kronebusch, PH.D., *Assistant Professor*
- ^d Harlan M. Krumholz, M.D., *Associate Professor*
Richard A. Lavelly, M.D., M.P.H., *Lecturer*
Mary Alice Lee, M.S.N., PH.D., *Lecturer*
- ⁱ Douglas L. Leslie, PH.D., *Assistant Professor*
John T. Lynch, M.P.H., *Lecturer*
Angela S. Mattie, M.P.H., *Lecturer*
Shannon Marie Mitchell, PH.D., *Associate Research Scientist*
Haq Nawaz, M.D., M.P.H., *Lecturer*
- ^k Alvin Novick, M.D., *Professor*
Mary K. Olson, PH.D., *Assistant Professor*
Alexander Ortega, PH.D., *Assistant Professor*
- * A. David Paltiel, PH.D., *Associate Professor*
William P. Quinn, M.P.H., *Lecturer*
Marie V. Roberto, DR.P.H., *Lecturer*
- ⁱ Robert A. Rosenheck, M.D., *Professor*
Nancy L. Roth, PH.D., *Lecturer*
- ^h Daniel S. Rowe, M.D., *Professor Emeritus*
Mark J. Schlesinger, PH.D., *Associate Professor*
- ^h Cornell Scott, M.P.H., *Assistant Clinical Professor*
George A. Silver, M.D., *Professor Emeritus*
Jody L. Sindelar, PH.D., *Associate Professor*
Stephanie Spangler, M.D., *Lecturer*
William J. Thomas, J.D., LL.M., *Lecturer*
Jeffery T. Wack, PH.D., *Lecturer*
William D. White, PH.D., *Associate Professor*
Joseph A. Zaccagnino, M.P.H., *Lecturer*

* On leave of absence fall 2001.

† On leave of absence spring 2002.

‡ On leave of absence 2001–2002.

^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.

Faculty Profiles

Michael H. Merson, Dean of Public Health, Professor, and Chair of the Department of Epidemiology and Public Health. Between 1978 and 1995 Dean 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. M.D. State University of New York, Health Sciences Center, Brooklyn.

Serap Aksoy, Associate Professor, 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.

Francis L. Black, Professor Emeritus, Division of Epidemiology of Microbial Diseases. Professor Black has conducted numerous studies, including protection from measles in the United States and in less developed countries, and HTLV-II in an endemic setting. He also studies the impact of infectious diseases on isolated populations, especially in South American forest tribes. This involves factors related to their isolation, their genetics, especially with regard to high levels of inbreeding, and their origins and genetic interrelations. Ph.D. University of California, Berkeley.

Michael B. Bracken, Professor and Head, 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 director of the Yale Perinatal Epidemiology Unit, which conducts research in obstetric, perinatal, and

neonatal disease. 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, Assistant Professor and Head, Health Management Program, Division of Health Policy and Administration. Professor Bradley's research interests include health care services for the elderly, including long-term care and end-of-life care. This work involves assessing current attitudes, knowledge, and beliefs regarding life-sustaining treatment and palliative care. In addition, she studies the implementation and management of innovations in clinical care in the acute care setting. Ph.D. Yale University.

Susan H. Busch, Assistant Professor, Health Management Program, Division of Health Policy and Administration. Professor Busch conducts health services research on the treatment of depression and managed care. She has extensive training in management and economics. Ph.D. Harvard University.

Kent Buse, Assistant Professor, Division of Global Health. Professor Buse's research interests are concerned with the political and institutional aspects of health policy making at the international and national levels – with a particular emphasis on health issues affecting countries of low and middle income. Research projects have included the role of the World Bank in the health sector, aid coordination and management, global public-private health partnerships, globalization and health, as well as global health governance. Ph.D. London School of Hygiene and Tropical Medicine.

Elizabeth B. Claus, Associate Professor, 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 neuro-surgical 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.

Joel Dubin, Assistant Professor, Division of Biostatistics. Professor Dubin's main research interest is developing methods, including dynamical correlation and regression techniques, for multivariate longitudinal data. These nonparametric and semiparametric

methods have been successfully implemented in an NIH-funded nephrology study, where a multi-variate set of acute phase blood proteins were collected repeatedly for up to two years for a cohort of hemodialysis patients. An additional research interest is in developing graphical techniques that combine individual and cohort-specific survival information simultaneously, including information for right-censored subjects. This research has resulted in two separate graphical methods, the event chart and the event history graph, the latter of which allows for viewing of time-dependent covariate information embedded within the well-known Kaplan-Meier survival curve. Ph.D. University of California, Davis.

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.

Ravi V. Durvasula, Assistant Clinical Professor, Division of Epidemiology of Microbial Diseases. Dr. Durvasula's research is focused on the development of novel transgenic strategies for controlling certain human infectious diseases. In the area of vector-borne infections, Dr. Durvasula is involved in the genetic manipulation of arthropod vectors of Chagas disease and leishmaniasis. He is developing strategies for field application of transgenic microbes and is actively testing the safety and efficacy of these approaches. Additionally, Dr. Durvasula is interested in the use of transgenic human commensals for control of certain diseases such as influenza, and is developing a line of engineered human microbes. M.D. McGill University.

Biröl Emir, Assistant Professor (Adjunct), Division of Biostatistics. Professor Emir's research interest includes design, conduct, and analysis of all phases of randomized clinical trials, and diagnostic markers. Ph.D. Iowa State University.

Durland Fish, Associate 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.

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.

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.

Theodore R. Holford, Professor, 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.

Sarah McCue Horwitz, Associate Professor and Head, Division of Health Policy and Administration. Professor Horwitz's research activities have centered on the interplay between formal care-providing systems (e.g., medical and social welfare) and the vulnerable populations they serve. Her research has been focused on the impact that formal systems and psychosocial factors have on the clinical course and functional outcomes of vulnerable children. Specific research efforts include the latent functions of medical care; the identification and management of psychosocial and developmental problems within primary pediatric medical care settings; the long-term impact of school-age pregnancy for the young mother and her offspring; and physical and mental health outcomes for children placed in or at risk for placement in substitute care. Ph.D. Yale University.

Jeannette R. Ickovics, Associate Professor, 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.

Akiko Iwasaki, Assistant Professor, Division of Epidemiology of Microbial Diseases. Professor Iwasaki's research is aimed at understanding the mechanism of immune induction at mucosal surfaces to infectious microorganisms. She has characterized distinct dendritic cell populations in the gut-associated lymphoid organs that are capable of inducing mucosa-specific immune responses in mice. The goal is to decipher how these dendritic cell subsets distinguish innocuous food antigens from dangerous microbial antigens and induce appropriate responses in vivo. In parallel, she is investigating the dendritic cell subsets that reside in the female genital tract. Determining their localization and function in relation to the hormonal changes that occur within this organ is crucial for understanding the pathogenesis of sexually transmitted disease agents as well as for designing effective mucosal vaccines. Ph.D. University of Toronto.

James F. Jekel, Professor Emeritus, Division of Global Health. Dr. Jekel's areas of study include adolescent pregnancy; epidemiology of crack cocaine abuse; epidemiology of low birth weight; and methods for planning and evaluating community health services. M.D. Washington University.

Beth A. Jones, Assistant 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, 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.

David L. Katz, Associate Clinical Professor, Division of Health Policy and Administration. Dr. Katz is Director of Medical Studies in Public Health. He is a board-certified specialist in both Internal Medicine and Preventive Medicine/Public, director of the Yale-Griffin Prevention Research Center, and director of the newly established Integrative Medicine Center at Griffin Hospital. He is the author of several books and numerous research articles on topics related to health promotion, disease prevention, and public health. His particular professional interests include nutrition, the prevention of chronic diseases, innovations in graduate medical education, and community health promotion. M.D. Albert Einstein College of Medicine.

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.

Ilona S. Kickbusch, Professor and Head, Division of Global Health. Professor Kickbusch joined EPH from the World Health Organization, where she initiated and headed a range of innovative programs such as Healthy Cities and the Ottawa Charter for Health Promotion. Her major research interests are in global health policy and governance, the interface between global and local health developments, healthy communities, and the social determinants of health. She has published widely and has received a number of awards. She continues to act as an adviser to WHO and other international organizations. At present, she is developing a program of global health studies at Yale. Ph.D. University of Konstanz, Germany.

Karl S. Kronebusch, Assistant Professor, Division of Health Policy and Administration. Professor Kronebusch's research and teaching interests focus on the politics of health and social policy. In his current research, he is analyzing the effects of state governments on several important American social welfare programs. This research includes an analysis of enrollment changes associated with implementation of mandated expansions of Medicaid coverage of children; the responses of state governments to different aspects of federal government policy change; and the effects of race, income, and geographic variations on social welfare programs. Ph.D. Harvard University.

Brian P. Leaderer, Professor and Head, Division of Environmental Health Sciences. 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. Ph.D. Yale University.

Lowell S. Levin, Professor Emeritus, Division of Global Health. Professor Levin's research focuses on examining the health impact of such public policies as transportation, education, agriculture, income maintenance, and housing. These action-oriented studies carry through efforts of intervening in the policy-formulating process. Studies have been completed in Trento and Bolzano (Italy) and Valencia (Spain). Current work on these "investment for health" studies continues in Slovenia and Chemnitz (Germany). Other parallel research involves "auditing" health promoting enterprises in countries of Central and Eastern Europe. Ed.D. Harvard University.

Becca R. Levy, Assistant 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, Assistant 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.

Gary W. Mack, Associate Professor, Division of Environmental Health Sciences. Professor Mack's research interests are in the areas of environmental physiology and temperature regulation. Ph.D. University of Hawaii.

Robert W. Makuch, Professor and Head, 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, Associate 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. 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.

Kathleen Ries Merikangas, Professor, Division of Chronic Disease Epidemiology. Professor Merikangas's major research interest is the genetic epidemiology of psychiatric and neurologic disorders. Her research includes studies of the familial aggregation of psychiatric and neurologic disorders, studies of children at high risk for the development of psychiatric disorders and substance abuse, community studies of mental disorders of adults and children, and migration studies. A broad range of substantive areas are addressed in the research, which is designed primarily to identify risk and protective factors for the development of mental disorders and to examine causes of associations between discrete psychiatric syndromes, and comorbidity between mental disorders with substance abuse and with medical illness. Ph.D. University of Pittsburgh.

Mary K. Olson, Assistant Professor, Division of Health Policy and Administration. Professor Olson's fields of specialization include regulation, health and pharmaceutical economics and policy, and the study of bureaucracy. Her research uses economic theories and methods to analyze bureaucratic decision making in the Food and Drug Administration and to explore the impact of regulatory reforms on health policy outcomes. Ph.D. Stanford University.

Alexander Ortega, Assistant Professor, Division of Health Policy and Administration. Professor Ortega's research interests are in health services epidemiology and policy, evaluation of the health services system, access to care, utilization of services, primary care, and child and minority health. Ph.D. University of Michigan.

A. David Paltiel, Associate Professor, 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.

Kim-Thu C. Pham, Assistant Clinical Professor, Division of Global Health. Dr. Pham's clinical and research interests focus on health disparities among disadvantaged populations. Specific interests include determinants of health behavior among women of color, particularly in relation to reproductive health. She is also interested in the factors that influence the health of foreign-born individuals, including issues related to immigration status and acculturation. As Coordinator of Public Health Practice, her current teaching and research focus on issues of health promotion at the community level. M.D. Columbia University.

Harvey A. Risch, Associate 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. Ph.D. University of Chicago; M.D. University of California, San Diego.

Nancy H. Ruddle, Professor and Head, Division of Epidemiology of Microbial Diseases. 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 α , 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.

Mark J. Schlesinger, Associate 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.

John C. Sinclair, Professor (Adjunct), Division of Chronic Disease Epidemiology. Dr. Sinclair is a pediatrician/clinical epidemiologist with a special interest in the evidence-based approach to clinical care. He is particularly interested in the validity and applicability of therapeutic recommendations. For many years he worked at McMaster University in Hamilton, Canada, where he held a joint appointment in Pediatrics (Neonatology) and Clinical Epidemiology and Biostatistics. Since coming to Yale in 1999, he (with Michael Bracken) has developed a new course, Introduction to Evidence-Based Health Care. He has been coordinating editor of the Cochrane Neonatal Review Group since its inception in systematic reviews of randomized trials of therapies in the neonate. He is the author of more than 140 publications in the fields of neonatology and clinical epidemiology. M.D. University of Manitoba.

Jody L. Sindelar, Associate 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, Assistant 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.

John T. Stitt, Professor, Division of Environmental Health Sciences. Professor Stitt’s research interests are concerned with the physiology of mammalian temperature regulation, environmental temperature stress, and the pathophysiology of those endotoxins that cause fever, hypotensive shock, and respiratory distress. He is interested in the role that cytokines (such factors as interleukins and tumor necrosis) play in defending the body against a variety of insults and infections. His studies have demonstrated where

these cytokines act within the CNS to precipitate fever and have shown its subsequent pathogenic pathways. More recently, he has been studying the role of cytokines that are induced by endotoxins, in eliciting the production of nitric oxide within the lungs and the vasculature, as a possible cause of both endotoxin shock and adult respiratory distress syndromes. Ph.D. Queen's University.

Jan A. J. Stolwijk, Professor Emeritus, Division of Environmental Health Sciences. Professor Stolwijk's current research interests focus on the epidemiology of lung cancer in connection with residential radon exposures. Additional research interests include the possible association between community and occupational exposure to magnetic fields and excess risk of different leukemias and central nervous system tumors, and possible other risk factors for childhood acute lymphoblastic leukemia. Other research interests include the development and application of risk assessment methodologies in the area of uncertain and low-level exposures associated with hazardous waste sites and other environmental hazards especially as these relate to the development of exposure guidelines and standards aimed at health-based strategies for managing such risks. Ph.D. Wageningen University.

Gregory H. Tignor, Associate Professor Emeritus, Division of Epidemiology of Microbial Diseases. Professor Tignor's research is focused on the identification, characterization, and pathogenesis of zoonotic viruses that cause encephalitis in humans. Research on identification and characterization has included serologic and morphologic studies on field specimens with both arboviruses and rabies virus. Research on rabies virus has been directed toward definition of host cell receptors for the virus and delineation of the role of these receptors in the pathogenesis of the disease. These research interests are now largely focused on health problems in India. D.Sc. Johns Hopkins University.

William D. White, Associate Professor, Health Management Program, Division of Health Policy and Administration. An economist, Professor White does research on the impact of managed care on health care markets. Other areas of research include the design of reimbursement systems for health care services and the regulation of health care professionals. He teaches in the areas of health economics, managed care, and reimbursement. Ph.D. Harvard University.

John P. Wise, Assistant Professor, Division of Environmental Health Sciences. Professor Wise's research interests include how interindividual genetic variation affects the risk of humans developing cancer or asthma, metal-induced toxicity and carcinogenesis, and the molecular and cellular mechanisms of toxicity induced by particulate air pollution. Ph.D. George Washington University.

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, Associate 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.

Hongyu Zhao, Associate Professor, 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 at Berkeley.

Liangbiao Zheng, Assistant 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, Associate Professor, 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., Sc.M. Harvard University.

History of the Department of Epidemiology and Public Health

The Department of Epidemiology and Public Health at Yale is one of twenty-nine 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.

Academic 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 a close 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. For many students this relationship stimulates ideas, encourages initiative, builds self-confidence, and contributes to professional growth.

All students focus their studies in one of the six divisional programs — Biostatistics, Chronic Disease Epidemiology, Environmental Health Sciences, Epidemiology of Microbial Diseases, Global Health, and Health Policy/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 enrolled in the Department of Epidemiology and Public Health (EPH) 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 60 course credits; 26 of these credits are in the core curriculum required by the department. In addition, each division requires its students to take specific courses. The remainder of the required credits are obtained by taking courses in EPH, or in other schools in the University.

Students may elect to take more than the minimum number of credits needed to graduate. However, no student may shorten the four-term program by accumulating credits sufficient to graduate at the end of the first three terms. No matter what the number of their accumulated credits, full-time students must carry at least 12 credits in their final term. Each candidate must complete all of the requirements for the M.P.H. degree within five years of the date of matriculation.

A few students enroll in the M.P.H. program on a part-time basis. Since the core curriculum courses given in the first term are considered essential to subsequent work in the program, part-time students are advised to take the entire core in the first year if at all possible. However, if it is not possible to complete the entire core in the first year, students must complete the core in their first two consecutive fall terms. In addition, students are expected to complete core courses within a division before taking additional

courses for credit in that division. Part-time students are strongly encouraged to take a minimum of 6 credits each term and must complete the M.P.H. degree within five years of the date of matriculation. Those considering part-time study should be aware that no evening, weekend, or summer courses are offered at EPH.

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>Credit Hours</i>
BIS 505a and b	Introduction to Statistical Thinking I & II	3 each term
CDE 505a	Social and Behavioral Influences on Health	2
CDE/EMD 508a	Principles of Epidemiology I	5
<i>One of the following:</i>		
EHS 503b	Introduction to Toxicology	3
EHS 510b	Fundamentals of Environmental Health and Risk Assessment	2
EHS 511a	Applied Risk Assessment I	2
<i>One of the following:</i>		
HPA 510a	Health Policy and Health Systems	3
HPA 560b	Issues in Financing and Reimbursement	2

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.

Additional M.P.H. Degree Requirements

EPH 520, Internship. 3 credits. The Internship 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 select 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 graded on a Satisfactory/Unsatisfactory basis. *Students in the shortened program and joint-degree students are waived from the Internship;* they may choose to take the course as an elective, but it may not count toward the number of credits required for the M.P.H. degree. Prerequisites: completion of one year of the M.P.H. program.

EPH 525a and b, Thesis. 1 credit (fall), 5 credits (spring). The thesis is taken in the fall (1 credit) and spring (5 credits) terms of 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; but it also may be a spin-off from a faculty project, a chapter-length case history, or an audiovisual presentation such as a videotape. Students work closely with faculty advisers in designing and implementing their project and in writing the thesis. Detailed guidelines for the thesis are outlined in Appendices I and II.

M.P.H. Divisional Programs

BIostatISTICS

Robert W. Makuch, 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.

A graduate of the Biostatistics M.P.H. program is able to produce valid and efficient study designs, develop and implement appropriate database management procedures for recording and storing data, extract working tables and statistical summaries, analyze data in terms of stated hypotheses, generate new hypotheses, and properly interpret study results. Careers include collaborating on research teams, analyzing data for governmental agencies or private firms dealing with health databases, and teaching and research in an academic setting.

Required Courses for the M.P.H. Degree in Biostatistics

<i>Course Number</i>	<i>Course Title</i>	<i>Credit Hours</i>
BIS 525a and b	Seminar in Biostatistics	1 each term
BIS 540b	Fundamentals of Clinical Trials	2
BIS 623a	Applied Regression Analysis	3
BIS 625a	Categorical Data Analysis	3
BIS 635b	Topics in Statistical Epidemiology	3
*STAT 541a	Probability Theory	3
*STAT 542b	Theory of Statistics	3
<i>One of the following:</i>		
BIS 628b	Longitudinal Data Analysis	3
BIS 637a	Stochastic Processes in Biology and Medicine	3
BIS 643b	Theory of Survival Analysis and Its Applications	3
BIS 646a	Nonparametric Statistical Methods and Their Applications	3
BIS 691b	Theory of Generalized Linear Models	2

Regulatory Affairs Program

The Regulatory Affairs Program is designed to help students gain an understanding of federal statutes and regulations that control the drug and device approval process, not only in the United States but internationally. Although the program resides within the Division of Biostatistics, students from any division in EPH are invited to participate. The graduate of this program will have practical experience through attendance in pharmaceutical-sponsored professional meetings and academic training in public health policy, biostatistics, and epidemiology. This educational background will provide a sound foundation for individuals pursuing a career in regulatory affairs to promote the appropriate development of biological, drug, and medical device products to the marketplace.

A limited number of students are admitted to the program each year, and interested students should contact Professor Robert Makuch in Biostatistics at 203.785.2838.

CHRONIC DISEASE EPIDEMIOLOGY

Michael B. Bracken, M.P.H., 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 devel-

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

opment 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 Yale Perinatal Epidemiology Unit, the Yale Genetic Epidemiology Research Unit, and the Yale Center for Studies 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.

Required Courses for the M.P.H. Degree in Chronic Disease Epidemiology

<i>Course Number</i>	<i>Course Title</i>	<i>Credit Hours</i>
CDE/EHS 516b	Principles of Epidemiology II	3
CDE 517a	Developing a Research Protocol	4
CDE 521a	The Epidemiology of Some Common Chronic Diseases	3
CDE 523b	Measurement Issues in Chronic Disease Epidemiology	2
CDE 525a and b	Seminar in Chronic Disease Epidemiology	1 each term
CDE 534b	Approaches to Data Management and Analysis of Epidemiologic Data	3

Students are advised to take two of the following courses:

CDE 511a	Health Psychology: Clinical and Social Foundations	3
CDE 518b	Introduction to Pharmacoepidemiology	2
CDE 531a	Health and Aging	2
CDE 532b	Epidemiology of Cancer	3
CDE 533b	Topics in Perinatal Epidemiology	2
CDE 550a	Introduction to Evidence-Based Health Care	3
CDE 562a	Nutrition and Chronic Disease	3

CDE students are also encouraged to take HPA 603b, The Ethical Conduct of Research (1 credit hour).

**CHRONIC DISEASE EPIDEMIOLOGY:
SOCIAL AND BEHAVIORAL SCIENCES (SBS)**

Starting with the fall term 2002, the CDE division will add a new program in Social and Behavioral Sciences (SBS). The overall purpose of this program is to provide specialized instruction in the theory and methods of the social and behavioral sciences which emphasize the behavioral, psychological, and social influences on health, illness, and recovery. Students in the SBS program will share a core of courses with other CDE students in epidemiologic methods and biostatistics, as well as an overview course of common chronic diseases and a course dealing with the development of research protocols. 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, and on methods in psychiatric epidemiology, will also be offered.

Required Courses for the M.P.H. Degree in Social and Behavioral Sciences

<i>Course Number</i>	<i>Course Title</i>	<i>Credit Hours</i>
CDE/EHS 516b	Principles of Epidemiology II	3
CDE 517a	Developing a Research Protocol	4
CDE 521a	The Epidemiology of Some Common Chronic Diseases	3
CDE 534b	Approaches to Data Management and Analysis of Epidemiologic Data	3
CDE 671	Psychosocial and Behavioral Epidemiology	3
CDE 672	Strategies of Health Promotion and Disease Prevention	3
CDE 673	Measurement Issues in Psychosocial and Behavioral Epidemiology	2

Students are advised to take two of the following courses:

CDE 511a	Health Psychology: Clinical and Social Foundations	3
CDE 531a	Health and Aging	2
CDE 670b	Epidemiology of Psychiatric Disorders	2
CDE 674	Preventive Interventions: Theory, Methods, and Evaluation	2
CDE 675a	Religion, Health, and Society	2

ENVIRONMENTAL HEALTH SCIENCES

Brian P. Leaderer, Ph.D.

Division Head

In the course of their daily activities individuals spend time in a variety of indoor and outdoor 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. Specifically, graduates should have acquired the skills and experience to do the following:

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

Required Courses for the M.P.H. Degree in Environmental Health Sciences

<i>Course Number</i>	<i>Course Title</i>	<i>Credit Hours</i>
Required of all EHS students		
<i>First Year, Fall Term</i>		
EHS 502a	Physiology for Environmental Health Sciences	3
EHS 514a	Environmental Chemistry	3
<i>First Year, Spring Term</i>		
EHS 503b	Introduction to Toxicology	3
<i>Second Year, Fall Term</i>		
EHS 508a	Assessing Exposures to Environmental Stressors	2
Requirements for specific tracks		
<i>Environmental Epidemiology Track</i>		
EHS 507a	Environmental Epidemiology	3
EHS/CDE 516b	Principles of Epidemiology II	3
<i>Environmental Risk Assessment Track</i>		
EHS 507a	Environmental Epidemiology	3
EHS 511a	Applied Risk Assessment I	2
<i>Environmental Health Policy Track</i>		
*F&ES 725b	Science and Politics of Environmental Regulation	3
*F&ES 864b	Environmental Protection Clinic	3

EPIDEMIOLOGY OF MICROBIAL DISEASES

Nancy H. Ruddle, 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, and parasites, including classification, replication, biochemistry, genetics, immunology,

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

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 biological 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.

Required Courses for the M.P.H. Degree in Epidemiology of Microbial Diseases

<i>Course Number</i>	<i>Course Title</i>	<i>Credit Hours</i>
<i>First Year, Fall Term</i>		
EMD 519a	Introduction to Microbial Diseases	3
<i>First Year, Spring Term</i>		
EMD 541b	Infectious Diseases: Epidemiology, Prevention, and Control	3

Students are required to take a combined minimum of 12 credits from the two lists below. At least 4 credits must be taken from each list.

List A

EMD 512b	Immunology for Epidemiologists	2
EMD 516a	Biology of Viruses of Humans	2
EMD 534b	Molecular Epidemiology of Bacterial Pathogens	2
EMD 650b	Biology of Disease Vectors	2
EMD 664b	Biology of Parasitic Protozoa and Helminths	2
<i>Either:</i>		
EMD 548b	Observing the Earth from Space	3
<i>or:</i>		
BIS 511a	GIS Applications in Epidemiology and Public Health	3

List B

EMD 530b	Hospital Epidemiology	2
EMD 536b	Investigation of Disease Outbreaks	3
EMD 557a	Public Health Issues in HIV/AIDS	3
CDE/EHS 516b	Principles of Epidemiology II	3

EMD students are also required to present their thesis research at a poster session in May.

GLOBAL HEALTH

Ilona S. Kickbusch, Ph.D.

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. Joint degrees exist with a number of the other Yale programs and allow for productive interdisciplinary exchanges. 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. Full use is made of the proximity to New York, with visits to the United Nations and many other international organizations.

The Global Health Curriculum is designed around two concentrations: (1) Global Health Governance and Policy, and (2) International Health Promotion and Community Development. These concentrations allow students to develop detailed expertise in their area of interest, while building important skills in public health practice, program development, and policy analysis. Specific in-depth studies in substantive areas of interest are pursued according to the career plans of individual students, for example, human rights, nutrition, women's health, or public-private partnerships.

The Division houses the Yale/WHO Collaborating Center for Health Promotion Policy and Research. The center offers students opportunities to participate in ongoing

projects in support of the World Health Organization, with particular attention to Latin America and Europe, including Eastern and Central Europe.

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.

Required Courses for the M.P.H. Degree in Global Health

<i>Course Number</i>	<i>Course Title</i>	<i>Credit Hours</i>
<i>First Year, Fall Term</i>		
GHD 551a	Introduction to Global Health	3
<i>First Year, Spring Term</i>		
GHD 513b	Topics in Global Health	2
GHD 550b	Global Health Promotion and Social Resources in Health	2
GHD 556b	International Public Health Practice Seminar	1
<i>Second Year, Fall Term</i>		
GHD 590a	Global Health Policy and Governance	2
<i>Additional Requirements for the Global Health Governance and Policy Concentration</i>		
GHD 552b	Global Public-Private Partnerships for Health Development	2
<i>One of the following:</i>		
GHD 519b	International Human Rights	1
HPA 529a	Policy Analysis and Health Politics	2
HPA 596b	Critical Policy Issues in the AIDS Pandemic	2
<i>Additional Requirements for the International Health Promotion and Community Development Concentration</i>		
GHD 542b	Community Health Program Planning	5
<i>One of the following:</i>		
GHD 545a	Global Problems of Malnutrition	3
GHD 554a	International Health Promotion and Communication: Theory and Application	2

HEALTH POLICY AND ADMINISTRATION

Sarah M. Horwitz, M.P.H., Ph.D.

Division Head

Karl S. Kronebusch, Ph.D.

Associate Director, Health Policy Program

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 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 management and policy tool and to enable students to view health services policy and management in broad ecological terms. In this manner 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, and private consulting firms, as well as in research.

Required Courses for the M.P.H. Degree in Health Policy and Administration

<i>Course Number</i>	<i>Course Title</i>	<i>Credit Hours</i>
HPA 510a	Health Policy and Health Systems (core requirement)	3
HPA 514b	Government and Health Policy	3
HPA 529a	Policy Analysis and Health Politics	2
HPA 562b	Health Care Financial Analysis	2
HPA 583b	Methods in Health Services Research	2
HPA 586b	Microeconomics for Health Care Professionals	2
HPA 597b	Integrative Policy Analysis Seminar	2

HEALTH MANAGEMENT PROGRAM

Elizabeth H. Bradley, M.B.A., Ph.D.

Program Head

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, capped by an integrated seminar in the second year, give students an excellent foundation for work in the field.

Required Courses for the M.P.H. Degree in Health Management

<i>Course Number</i>	<i>Course Title</i>	<i>Credit Hours</i>
HPA 510a	Health Policy and Health Systems (core requirement)	3
HPA 518a	Practice Seminar in Health Management	1
HPA 560b	Issues in Financing and Reimbursement	2
HPA 561b	Integrative Seminar in Health Services Management	2
HPA 583b	Methods in Health Services Research	2
HPA 586b	Microeconomics for Health Care Professionals	2
*MGT 550a	Marketing Management	2
*MGT 571b	Operations Management I	2
*MGT 815b	Managerial Controls I	1.5
*MGT 870a	Financial Accounting	1.5

*These courses are offered in the School of Management.

*MGT 885a	Foundations of Teams	1.5
*MGT 886b	Designing and Managing Organizations	1.5
*MGT 890a	Valuation and Investment	1.5

MASTER OF SCIENCE DEGREE IN BIOSTATISTICS (M.S.)

The M.S. in Biostatistics 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. As opposed 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.

Like the Ph.D., the M.S. in Biostatistics 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 are responsible for overseeing the progress of these students.

Degree Requirements

The candidate for the M.S. in Biostatistics must complete a minimum of fifteen courses and a master's thesis.

Required Courses

BIS 540b	Fundamentals of Clinical Trials
BIS 623a	Applied Regression Analysis
BIS 625a	Categorical Data Analysis
BIS 635b	Topics in Statistical Epidemiology
BIS 643b	Theory of Survival Analysis and Its Applications
†STAT 541a	Probability Theory
†STAT 542b	Theory of Statistics
†STAT 610a	Statistical Inference
†STAT 612a	Linear Models

In addition, students must take four electives in Biostatistics and Statistics and two electives in Epidemiology and Public Health (not in Biostatistics).

Master's Thesis

In the second year of the M.S. program, the student is required to execute a program of independent research under the direction of a faculty member. This project will usually fall 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.

*These courses are offered in the School of Management.

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

The student is required to prepare a written thesis and make an oral presentation of the results of the work under the supervision of two biostatistics faculty. One outside reader provides an independent evaluation of the candidate's efforts.

DOCTORAL DEGREES

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. Hence, there is an inherent tension between the narrow focus of a specific area of study expected in scholarship at the doctoral level and the broad view of public health as seen in the diverse research interests of the department's faculty.

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.

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 twelve term courses or the equivalent, not including seminars and colloquia. The Graduate School requires that Ph.D. students achieve a grade of Honors in at least two doctoral-level courses.

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 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. A chairperson 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.

Each DAC is expected to meet at least once each term, and more frequently if necessary. Meetings of the DAC are scheduled by the student, and the student produces and distributes minutes of each meeting to the participants and the DGS. The DAC reviews and approves the prospectus as developed by the student and recommends to the DGS and the Departmental Doctoral Committee that the prospectus be approved.

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 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. At least one of the readers must be an EPH faculty member; other readers may be faculty of other departments at Yale and one may be from another university. A reader from another university may be selected if he/she is a recognized authority in the area of the dissertation. A proposal to include a reader from another institution must be accompanied by the curriculum vitae of that outside reader. 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.

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 637a, 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.

In addition, active involvement of students in faculty research is required. Students are required to undertake a one-term project in which each student collaborates with another investigator. This work is done under the guidance of a member of the Biostatistics faculty, and students are required to write a report summarizing the results of their work.

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

Comprehensive Examinations

The components of the comprehensive examinations in the Division of Biostatistics are biostatistics, theoretical statistics, and the applied area. The field to be covered by the third part of the examination is intended to meet the individual needs of the student, but final approval of an area must be obtained from the Biostatistics faculty.

Research Experience

The research career of a biostatistician involves methodological work that may be directed individually but that is also likely to include collaborative work with other investigators. Thus, students are encouraged to become involved in collaborative projects with other health scientists. The Division of Biostatistics also requires students to develop excellent knowledge of theoretical statistics, which includes work with the faculty in the Department of Statistics.

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. 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.

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

General Biology/Epidemiology

CDE 521a, The Epidemiology of Some Common Chronic Diseases

Topic Areas

In order to ensure that students gain a broad knowledge regarding epidemiology, students take a minimum of 8 credits of topic area courses in addition to those in their specialty area:

CDE 518b, Introduction to Pharmacoepidemiology
CDE 532b, Epidemiology of Cancer
CDE 533b, Topics in Perinatal Epidemiology
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 553a, 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 epidemiologic methods is planned in more detail with respect to the areas to be examined. A committee of three members of the faculty is designated to organize this section of the comprehensive examinations. 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 from the preparation of a questionnaire and sampling through preparation of a final database for analysis. This experience is often gained through hands-on experience

working on actual research projects. During each course, faculty are expected to ensure that students gain experience with all aspects of ongoing research.

The Dissertation

For the doctoral dissertation, the division prefers that candidates 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, the most successful 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 answer 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 weekly 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 doctoral committee of the division 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 517a, Developing a Research Protocol

CDE 523b, Measurement Issues in Chronic Disease Epidemiology

EHS 516b, Principles of Epidemiology II

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 divisional director of graduate studies. 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 and b, Advanced Topics in Molecular Parasitology

EMD 684a, 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

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) a research proposal in an area distinct from the prospective dissertation topic. The research proposal topic is 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 written questions from each member of the committee based on readings and an oral defense of both the proposal and the written exam.

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.

*These courses are offered in the School of Medicine.

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

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 knowledge. 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

The specific required courses that prepare candidates in the areas of biostatistics, epidemiology, health services research/policy and economics/econometrics are the following:

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
- HPA 621b, Advanced Health Services Epidemiology

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

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

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.

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.

Courses without a letter designation are one-term courses offered in both the fall and the spring; either term or both may be taken for credit.

Bracketed courses are not offered in the current academic year.

BIOSTATISTICS

BIS 505a, Introduction to Statistical Thinking I. 3 credits. 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. Prerequisite: algebra. *R. Makuch.*

BIS 505b, Introduction to Statistical Thinking II. 3 credits. This continuation of BIS 505a covers multiple regression, analysis of variance, nonparametric tests, survival analysis, and an introduction to logistic regression. The course concludes with a review of variable classification and choice of statistical analysis. As in the first term, the Statistical Analysis Systems (SAS) software package is used for statistical analysis. Prerequisite: BIS 505a. *Faculty.*

BIS 511a, GIS Applications in Epidemiology and Public Health. 3 credits. 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. Prerequisite: basic computer skills. No prior GIS experience necessary. *T. Holford.*

BIS 525a and b, Seminar in Biostatistics. 1 credit each term. Faculty and invited speakers present and discuss current research. *H. Lin, H. Zhang.*

[BIS 538b, Survey Sampling: Methods and Management. 1 credit. 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 540b, Fundamentals of Clinical Trials. 2 credits. 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. Enrollment limited to second-year students. *R. Makuch.*

[BIS 560b, Database Management in Medicine and Epidemiology. 2 credits. This course covers the theory and practice of database management as applied to clinical trials, observational studies, and other prospective research projects. Emphasis is placed on the use of user-friendly database management packages that require little programming. Difficult problems in database management are described, although students are not expected to build applications of such complexity. Recent advances in the field of data management are studied. Prerequisite: working knowledge of Macintosh or Microsoft Windows. *P. Nadkarni.*]

BIS 561b, Advanced Topics and Case Studies in Multicenter Clinical Trials. 2 credits. 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 540b. Enrollment limited to second-year students. *P. Peduzzi, P. Hartigan.*

BIS 623a, Applied Regression Analysis. 3 credits. This course covers linear regression, testing hypotheses in multivariate regression, regression diagnostics, analysis of variance, and adjusting for covariates. Emphasis is on the application of methods. Prerequisite: BIS 505b or equivalent. *J. Dubin.*

BIS 625a, Categorical Data Analysis. 3 credits. 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 of a variety of data sets. Prerequisite: BIS 505b. *D. Zelterman.*

BIS 628b, Longitudinal Data Analysis. 3 credits. 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 are used throughout the course. Prerequisites: BIS 623a and BIS 625a. *J. Dubin.*

[BIS 631b, Topics in Genetic Epidemiology. 3 credits. 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. *H. Zhao, K. Merikangas, K. Kidd.*]

BIS 635b, Topics in Statistical Epidemiology. 3 credits. 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. *H. Zhang, T. Holford.*

[BIS 637a, Stochastic Processes in Biology and Medicine. 3 credits. 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 643b, Theory of Survival Analysis and Its Applications. 3 credits. 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 610a. *H. Lin.*

BIS 645a, Statistical Methods in Human Genetics. 2 credits. Probability modeling and statistical methodology for the analysis of human family data are presented. Topics include single locus and polygenic inheritance, segregation analysis using the transmission probability model and the mixed model, linkage analysis using lode scores, genetic risk prediction models, disease-marker associations, and DNA fingerprinting. Prerequisites: genetics; BIS 505a and b, or equivalent; and permission of the instructor. *H. Zhao.*

[BIS 646a, Nonparametric Statistical Methods and Their Applications. 3 credits. 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. 2 credits. This course considers a class of statistical models which is a natural generalization of the classical linear model. An outline of the generalized linear model is developed, and particular cases are discussed including binary response data, polytomous data, log-linear models, quasi-likelihood models, and models for survival data. Prerequisites: STAT 541a, STAT 542b, and BIS 623a. *H. Lin.*]

CHRONIC DISEASE EPIDEMIOLOGY

CDE 505a, Social and Behavioral Influences on Health. 2 credits. 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. *S. Kasl.*

CDE 508a/EMD 508a, Principles of Epidemiology I. 5 credits. 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 511a/PSYC 507a, Health Psychology: Clinical and Social Foundations. 3 credits. This seminar course covers state-of-the-art information, taken primarily from journal articles, across a broad range of topics including heart disease, cancer, AIDS, nutrition, eating disorders, and addictive behaviors, as well as theory, research studies, health policy, and the design and evaluation of intervention programs. The primary focus of this course is on understanding the central role of behavior in health, learning to think critically about studies in the field, and developing creative ideas for new approaches to research, intervention, and policy. *K. Brownell.*]

CDE 516b/EHS 516b, Principles of Epidemiology II. 3 credits. This course provides students with an overview of the principles of epidemiology. The first part of the course emphasizes fundamental epidemiologic principles including measures of disease

frequency and association, bias, confounding, precision, and interaction. The second part of the course emphasizes the design and conduct of various epidemiological studies. The final part of the course emphasizes causal inference and disease prevention and control. Prerequisites: CDE/EMD 508a and BIS 505a. *T. Zheng.*

CDE 517a, Developing a Research Protocol. 4 credits. 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. *Faculty.*

[CDE 518b, Introduction to Pharmacoepidemiology. 2 credits. 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. Olson.*]

CDE 521a, The Epidemiology of Some Common Chronic Diseases. 3 credits. This introductory survey course covers some of the major chronic diseases, including coronary artery disease, cancer, stroke, chronic obstructive lung disease, alcoholism, HIV disease, and Alzheimer's disease. Two classes are devoted to each disease. The first class is taught by an expert on the disease and covers its basic pathophysiology, etiology, epidemiology, risk factors, and public health importance. In the second class, an important research article about the disease is discussed. The course emphasizes developing a working knowledge of chronic diseases and the capacity to read the literature critically. Prerequisite: CDE/EMD 508a. *B. Jones.*

CDE 523b, Measurement Issues in Chronic Disease Epidemiology. 2 credits. 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 525a and b, Seminar in Chronic Disease Epidemiology. 1 credit each term. This yearlong course provides experience in hypothesis generation, data analysis, and presen-

tation. During the fall term, both Yale and visiting faculty present individual research. In the spring term, second-year master's students are expected to present their theses. Some class sessions are organized to provide students with experience in hypothesis generation, operationalization of variables from their "thesis" database, developing and implementing actual data analyses to test hypotheses, and presentation of findings. Emphasis is placed on class participation. Prerequisite: second-year M.P.H. status. *D. Stevens.*

CDE 531a, Health and Aging. 2 credits. Since 1900, the number of individuals 65 years and older has tripled and life expectancy has increased by about thirty years. In seminar 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. 3 credits. 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, CDE 516b, or permission of the instructor. *B. Cartmel.*

CDE 533b, Topics in Perinatal Epidemiology. 2 credits. 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. *M. Bracken.*

CDE 534b, Approaches to Data Management and Analysis of Epidemiologic Data. 3 credits. 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 CDE major or doctoral status (permission of the instructors for non-CDE majors required); students must have taken or must be currently taking BIS 505b and CDE 516b. *E. Triche.*

CDE 550a, Introduction to Evidence-Based Health Care. 3 credits. 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 508a. *J. Sinclair.*

[**CDE 562a, Nutrition and Chronic Disease.** 3 credits. 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. Preference is given to CDE majors. *S. Mayne.*]

CDE 619a, Advanced Epidemiologic Research Methods. 4 credits. 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: HP or better in BIS 505a and BIS 505b, doctoral status or permission of the instructor. *H. Risch.*

[**CDE 634a, Advanced Seminar in Perinatal Epidemiology.** 3 credits. Students examine practical and theoretical issues in research methodology important in studies of mothers and newborns, including surveillance, case control and cohort studies, randomized trials, diagnostic and other measurement problems. Substantive topics cover genetic and chromosome disorders, fetal development, congenital malformations, behavioral teratology, SIDS, spontaneous and induced abortion, infertility, and other obstetric and neonatal conditions. Exposure to all risk factors, both before and during pregnancy, is considered. Using existing data sets, students empirically test hypotheses of current interest to produce a scientific report. *M. Bracken.*]

[**CDE 638a/EMD 638a, HIV/AIDS Prevention Research Seminar.** 2 credits. This seminar course is designed for doctoral and postdoctoral students interested in conducting prevention research in HIV/AIDS. The seminar provides an interdisciplinary perspective of research issues specific to HIV/AIDS. In the first term, issues of HIV epidemiology, transmission, and prevention are covered. In addition, both epidemiology

and behavioral science study designs are reviewed in the context of published research. The second term, designed to meet students' needs and interests, will likely include issues in community research, ethics in AIDS research, AIDS-related policy, and grant writing. Throughout the year, students are expected to attend the Yale AIDS Colloquium Series, a forum where experts from around the nation are invited to Yale to present their research. Students are expected to select and present one current journal article to the group each term. In addition, students develop their own research plan for conducting a study in the field of HIV/AIDS prevention; these ideas are presented and discussed during the seminar, with a final written proposal developed by the end of the second term. Prerequisites: EMD/CDE 557a or HPA 596b or knowledge/experience in HIV/AIDS or admission to postdoctoral training program. Course may be open to some M.P.H. students with permission of the instructors. *J. Ickovics, R. Heimer.*]

CDE 639b, Research Seminar in Perinatal Epidemiology. 3 credits. This course is a continuation of CDE 634a, Advanced Seminar in Perinatal Epidemiology. Lecture topics include the clinical management of high-risk pregnancy and the newborn, and the biological aspects of fetal growth retardation. Methodologic issues include randomized trials, meta-analysis, and epidemiologic problems in case-control and prospective perinatal research. This course teaches and uses the principles of evidence-based medicine to prepare a systematic review of a body of research evidence of current interest. Students continue their research project started in CDE 634a. Prerequisite: CDE 634a. *M. Bracken.*

[CDE 669a, Research Seminar in Psychosocial Epidemiology. 2 credits. The course focuses on methodological issues (particularly research design and measurement) that arise in studies examining the role of psychosocial variables in physical and mental illness. Current studies by faculty and students are also discussed. Prerequisite: doctoral status or permission of the instructor. *S. Kasl.*]

[CDE 670b, Epidemiology of Psychiatric Disorders. 2 credits. 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. *K. Merikangas.*]

[CDE 671, Psychosocial and Behavioral Epidemiology. 3 credits. 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. Prerequisite: CDE 505a. *Faculty (2002).*]

[**CDE 672, Strategies of Health Promotion and Disease Prevention.** 3 credits. The course provides an overview of major theories concerning the dynamics of, and changes in, health behaviors; these include the health belief model, the transtheoretical model, and theory of planned behavior. Strategies for changing specific behaviors, such as physical activity, diet, and weight control, are discussed. Clinic-based and community-based strategies are compared. Issues in maintenance of behavioral and life-style changes are examined. Prerequisite: CDE 505a. *Faculty (2002).*]

[**CDE 673, Measurement Issues in Psychosocial and Behavioral Epidemiology.** 2 credits. Studies of social and behavioral influences on health often use broad concepts and broad theories, such as social disadvantage, stress and coping, and social support/social networks. Other studies utilize narrower concepts and theories, such as sense of control, efficacy, hardiness and resilience, and optimism. In either case there are substantial challenges to arriving at suitable conceptualizations and proper measurement strategies. The course offers an overview of these issues, providing an interplay of methodological empirical considerations of relevant studies. Prerequisite: CDE 505a. *Faculty (2002).*]

[**CDE 674, Preventive Interventions: Theory, Methods, and Evaluation.** 2 credits. This seminar focuses on the theory, methods, and evaluation of prevention and health promotion interventions. With basic psychosocial research as a foundation, the course reviews the design, implementation, and evaluation of interventions conducted in multiple settings and addressing a wide range of health, social, and behavioral problems. General principles that have been developed to integrate epidemiological and risk/protective factor research in the design and delivery of prevention and health promotion interventions are addressed. Areas of prevention include alcohol and substance abuse, HIV and STDs, psychiatric and mental health problems, violence, smoking, and promotion of resilience across lifespan. A second-year course. *Faculty (2002).*]

CDE 675a, Religion, Health, and Society. 2 credits. 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 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. The specific methodological challenges that religion presents to epidemiology and sociology are examined. Prerequisite: CDE 505a. *P. VanNess.*

ENVIRONMENTAL HEALTH SCIENCES

EHS 502a, Physiology for Environmental Health Sciences. 3 credits. 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. *G. Mack, L. Marks.*

EHS 503b, Introduction to Toxicology. 3 credits. 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. Douglas.*

EHS 505a, Introduction to Industrial Hygiene. 2 credits. 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. 3 credits. 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. 2 credits. 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 509a, Environmental Toxicology. 2 credits. This course surveys the basic methods and fundamental biochemical mechanisms of toxicity. Toxicity in mammalian organ systems, techniques for evaluating toxicity, mechanisms of selective toxicity, and environmental interactions are presented. Biomonitoring of human exposure to specific environmental toxicants (with toxicant examples) is also discussed. Prerequisite: EHS 503b or permission of the instructor. *J. Wise.*

EHS 510b, Fundamentals of Environmental Health and Risk Assessment. 2 credits. 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.*

EHS 511a, Applied Risk Assessment I. 2 credits. 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 512b, Applied Risk Assessment II. 2 credits. Toxicological aspects of risk assessment are developed from the basis of advanced toxicological concepts and their application to assessing risk. Prerequisite: EHS 503b. *J. Stoltwijk.*

EHS 514a, Environmental Chemistry. 3 credits. 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 516b/CDE 516b, Principles of Epidemiology II. 3 credits. This course provides students with an overview of the principles of epidemiology. The first part of the course emphasizes fundamental epidemiologic principles including measures of disease frequency and association, bias, confounding, precision, and interaction. The second part of the course emphasizes the design and conduct of various epidemiological studies. The final part of the course emphasizes causal inference and disease prevention and control. Prerequisites: CDE/EMD 508a and BIS 505a. *T. Zheng.*

EHS 518a, Environmental Measurement. 3 credits. Human activities affect natural phenomena, and the resulting changes affect humans. Environmental monitoring refers to repeated observations for the study of these relations. The objective of environmental monitoring is to guide the formulation and aid the implementation of environmental management policies designed to protect human health and well-being, which includes ecological well-being. This course investigates the basic scientific principles and technologies of environmental measurements and monitoring, including boundaries on the collection, interpretation, and use of environmental data. *E. Gandsman, T. Ouimet, R. Klein.*

EHS 519b, Models for Assessing Exposure to Environmental Contaminants. 2 credits. Students are introduced to various computer models used to assess human exposures to environmental contaminants. The students obtain a working knowledge and gain experience in applying computer models to environmental hazards through problem sets. Prerequisite: EHS 511a or permission of the instructor. *J. Stoltwijk.*

[**EHS 522b/E&EB 621b, World Population and Environmental Issues.** 3 credits. This course examines the principles of global demography with emphasis on influences of population growth on environmental problems in ecosystems, health, economies, the atmosphere, water, soil, and energy. The history of population size changes, patterns of migration, and family planning in more and less developed countries are also examined. Prospects for population stability and low-growth economics are considered. Regional case histories are emphasized. *C. Remington, R. Evenson.*]

EHS 532b, Indoor Climate. 2 credits. 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 551a and b, Seminar in Environmental Health. 1 credit each term. 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 course 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. Prerequisite: permission of the instructor. *N. Stachenfeld.*

EHS 553a, Epidemiological Methods in Injury Control. 2 credits. 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 573b, Occupational Epidemiology. 2 credits. 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/INT 151a and b, Introduction to Occupational and Environmental Medicine. 2 credits each term. 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. Prerequisite: M.D. degree or permission of the instructor. *M. Cullen (fall), M. Russi (spring).*

[EHS 577a and b, Introduction to Laboratory Techniques in Molecular Epidemiology. 4 credits. The student learns laboratory techniques used as tools in molecular epidemiology. These include the following: genotyping, PCR, gel electrophoresis, nucleic acid extraction SSCP, post-labeling, and biomarker measurement. Prerequisites: familiarity with biosafety procedures and permission of the instructor. *J. Wise.*]

EHS 578b, Hazardous Waste Management. 3 credits. Students are introduced to the complex problem of managing hazardous wastes and materials. The course offers background in legal and regulatory definitions, and examines health effects and the use of

comparative risk assessment, as well as the siting of facilities, liability issues, and associated ethical dilemmas. Finally, the course considers various proposals for policy reform in this area. This course is offered in alternate years. *M. Gerrard.*

EHS 579a, Advanced Laboratory Techniques in Environmental Health Sciences. 3 to 8 credits. The student learns laboratory techniques used as tools in environmental health. The term is spent in a single laboratory. Methods in tissue culture, exposure measurement, toxicology, and molecular biology are offered. This is a hands-on course with close supervision by technically trained personnel. Since the laboratory works with bio-hazards, laboratory safety and use of biosafety hoods are emphasized. Prerequisites: familiarity with biosafety procedures, prior laboratory experience, and permission of the instructor. *J. Wise.*

[EHS 611a and b, Advanced Research Laboratories. 4 credits. This course is taken for two or three terms. It offers experience in directed research and readings in selected research laboratories. The first two terms should be taken in the first year of the doctoral program, and the third term is taken at a time determined after faculty consultation with the student. Prerequisites: doctoral status and permission of the instructor. *J. Wise.*]

[EHS 621b, Seminar in Environmental Health Risk Assessment. 2 credits. 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. Prerequisites: BIS 505a; doctoral status. *J. Stolwijk.*]

EHS 655, Readings in Environmental Health. 2 credits. By arrangement with instructor, students study environmental topics through the current literature, often to develop a research or thesis protocol. Prerequisite: EHS major. *B. Leaderer.*

EPIDEMIOLOGY OF MICROBIAL DISEASES

EMD 508a/CDE 508a, Principles of Epidemiology I. 5 credits. 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 512b, Immunology for Epidemiologists. 2 credits. 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. Prerequisite: two terms of college biology. *A. Iwasaki.*

EMD 516a, Biology of Viruses of Humans. 2 credits. This course consists of a systematic review of the spectrum of viruses and their modes of replication, dissemination, pathogenesis, and immunogenicity. Special problems representative of the characteristics of

individual families of viruses are discussed. Prerequisites: biology and EMD 519a. *L. Alexander.*

EMD 519a, Introduction to Microbial Diseases. 3 credits. This course provides an introduction to the biology and epidemiology of etiologic agents associated with infectious diseases. The course introduces students to key concepts in immunology, bacteriology, virology, parasitology, and vector biology as they relate to human disease and its control. This course provides a framework for later courses that cover these individual topics in greater detail. *L. Zheng.*

EMD 530b, Hospital Epidemiology. 2 credits. 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. M. Dembry.*

EMD 534b, Molecular Epidemiology of Bacterial Pathogens. 2 credits. This course is designed to introduce students to the fundamentals of the molecular epidemiology of bacterial pathogens. The scientific basis for molecular epidemiological tools and their application toward addressing contemporary problems in public health is evaluated through a combination of lectures and case studies. Topics include the emergence of new bacterial pathogens, antibiotic resistance, vaccine design, and bioterrorism. Prerequisite: EMD 519a or permission of the instructor. *K. Kbosnood.*

[EMD 536b, Investigation of Disease Outbreaks. 3 credits. 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.*]

EMD 541b, Infectious Diseases: Epidemiology, Prevention, and Control. 3 credits. 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. Kbosnood.*

[EMD 542a, Infectious Diseases in Countries with Limited Resources. 2 credits. The pattern, process, and impact of infectious diseases on human populations in the Third World are studied through lecture and discussion. The epidemiology and ecology of infectious agents are reviewed in the context of environmental and socioeconomic factors that influence transmission. Epidemiological analysis of the major tropical infectious diseases addresses problems in surveillance, risk reduction, prevention of outbreaks, and design of research. Emphasis is placed on principles of tropical diseases, vaccination, international child health, and emerging diseases.]

[EMD 548b/G&G 562b/F&ES 506b, Observing the Earth from Space. 3 credits. Applications of satellite images to studies of the environment are explored. Topics include the spectrum of electromagnetic radiation, satellite-borne radiometers, data transmission and storage, computer image analysis, and merging satellite imagery with GIS. The uses of remotely sensed data in climatology, oceanography, surficial geology, forestry, agriculture, ecology, and epidemiology are discussed. A research project using satellite images to address a problem in one of these realms is required. Prerequisites: physics or chemistry, two courses in environmental sciences or equivalent, and permission of the instructors. *R. Smith, D. Fish.*]

EMD 557a/NUR 713a, Public Health Issues in HIV/AIDS. 3 credits. 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 synopsis are required. *K. Khoshnood.*

EMD 563a, Introduction to Laboratory Techniques in EMD. 3 credits. 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. Enrollment limited to eight. *S. Compton.*

EMD 642a/MB&B 642a/GENE 642a/MBIO 642a, Roles of Microorganisms in the Living World. 3 credits. 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. Requirements: class participation and three exams. *D. McMahon-Pratt, L. N. Ornston.*

EMD 650b, Biology of Disease Vectors. 2 credits. 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. 3 to 8 credits. 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. *Faculty.*

EMD 664b, Biology of Parasitic Protozoa and Helminths. 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. 4 credits each term. 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. Requirements: written analyses in the form of research article/paper. *D. McMabon-Pratt.*

EMD 680a and b, Advanced Topics in Molecular Parasitology. 1 credit each term. This broadly based seminar focuses on current research topics in cell and molecular parasitology. Topics are chosen from the current literature. Prerequisite: doctoral or advanced M.P.H. status. *C. Patton, D. McMabon-Pratt, C. Tschudi, M. Cappello.*

EMD 682a and b, Advanced Topics in Vector Biology. 1 credit. 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.*

EMD 684a, Molecular and Cellular Processes of Parasitic Eukaryotes. 3 credits. This course focuses on concepts central to the nature of parasitism. In-depth descriptions and analysis of parasite paradigms for biology. The course examines cellular and molecular processes. Prerequisites: biochemistry, cell or molecular biology. *D. McMabon-Pratt.*

EMD 694a, Tutorial in Population Genetics of Vectors. 1 credit. *L. Munstermann.*

EMD 695a, Readings in Vector Ecology. 1 credit. *D. Fish.*

GLOBAL HEALTH

GHD 513b, Topics in Global Health. 2 credits. Students have the opportunity to critically examine international health programs and policies in eight to ten substantive areas. Subjects include infectious and chronic disease interventions, women's health, health resource allocation, strategies in global aid, primary health care, environmental health, health promotion, refugees, and AIDS. *I. Kickbusch, N. Groce.*

GHD 519b, International Human Rights. 1 credit (half-term). This course is an introduction to the evolution of international human rights and of the legal instruments designed for their protection. The course studies the theoretical foundations of the idea of human rights in various civilizations and cultures, evaluates its legacy within the Western liberal tradition, and examines its meaning and relevance in dealing with major issues in the contemporary world. *G. Andreopoulos.*

GHD 542b, Community Health Program Planning. 5 credits. This course is designed to introduce students to fundamentals of the practice of public health, and consists of lectures and practicum. The classroom component begins with definitions of "community" and methods of community engagement. Discussion proceeds through the assessment of community assets and needs, identification and prioritization of health issues, cost-effectiveness of methods to address these issues, and evaluation of process and outcomes. Case examples derive from both the domestic and international arenas. The principle of evidence-based practice is emphasized throughout via the acquisition and interpretation of qualitative and quantitative data. The practicum is intended to reinforce specific aspects of the lectures in the context of a service-learning experience. Students enrolled in the course work in small groups with local agencies to address real and current community health problems. Group process and team building, ability to apply research and methodological skills to these problems, and ability to communicate project issues and findings are reviewed on a regular basis throughout the term. Integration of classroom discussions and assignments with the group project experiences culminates in a final paper and presentation to the class. *K. Pham.*

[**GHD 543b, Gender, Health, and Development: Program and Policy Perspectives.** 2 credits. This seminar 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. *Faculty.*]

GHD 545a, Global Problems of Malnutrition. 3 credits. 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 550b, Global Health Promotion and Social Resources in Health. 2 credits. This course takes an in-depth look at both the theory and the practice of health promotion in international development with a focus on social resources and social determinants. It examines the conceptual base of health promotion and explores integrated and support-led strategies that promote health. Emphasis is placed on health promotion strategies that create supportive environments for health, increase health literacy, and empower individuals and communities. *I. Kickbusch.*

GHD 551a, Introduction to Global Health. 3 credits. This course is an introduction to the organization of international health and the significant changes under way in a new interdependent and global environment. By focusing on different players in the global health arena, the course examines the origins and practice of health cooperation and examines the contributions of international agencies, governments, nongovernmental organizations, foundations, the private sector as well as the many new alliances and partnerships. By the end of the course students will have a solid understanding of the key actors in global health governance and the challenges they face in response to globalization. *I. Kickbusch, N. Groce.*

GHD 552b, Global Public-Private Partnerships for Health Development. 2 credits. The landscape of international collaboration in health is rapidly changing. One of the newest areas of collaboration is through global public-private partnerships (GPPPs) — hybrid organizations that transcend national boundaries and bring together a number of different partners to pursue joint goals. This seminar examines the factors fueling the rise in GPPPs, the interests actors pursue through partnership, and the controversies they provoke. Using a number of case studies, the course explores how partnerships are crafted and nurtured and the institutional arrangements and guidelines by which they are governed. Prerequisite: GHD 551a. *K. Buse.*

GHD 553b, Health Politics and Policies in Low- and Middle-Income Countries. 2 credits. Governments confront difficult organizational and financial choices in assuring the health of their populations. Using a number of topical case studies, students come to appreciate the complex political processes involved in policy making and implementation in so-called developing countries. Students use policy analysis frameworks (including a computer-aided political mapping exercise) to understand the roles and interests pursued by the variety of domestic and international actors active in health policy reform. *K. Buse.*

GHD 554a, International Health Promotion and Communication: Theory and Application. 2 credits (first half-term). Health communication is based on the premise that the problems of health and development, particularly as they affect the lives of the poor, are massive in scale and require integrated, holistic, self-determined solutions. This course addresses diffusion of innovation theory, principles of social marketing (emphasis on qualitative research methods), a public health communication model (integrating social marketing, behavior psychology, anthropology, and instructional design),

integrated media (mass, print, interpersonal), and relevant communication theory. Case and simulation studies facilitate grasp of the material, and lessons learned are explored in conjunction with potential applications. *S. Ratzan.*

GHD 556b, International Public Health Practice Seminar. 1 credit. 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. Second-year students are expected to attend regularly and participate actively in discussions. The seminar takes place weekly from early November until winter break. All GHD faculty will be part of organizing and contributing to this seminar. *I. Kickbusch.*

GHD 579a, Cross-Cultural Issues in Health. 2 credits (first half-term). 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.** 2 credits. 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 586a, Health and Human Rights. 2 credits. 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 status and GHD 519b or equivalent introductory course in human rights, or permission of the instructor. *W. Brown.*

GHD 590a, Global Health Policy and Governance. 2 credits. This course is designed for students with a basic understanding of health policy making and analysis who wish to apply this knowledge to global and international policy in relation to health problems and issues affecting countries of low, middle, and transitional income. It draws on a framework that explores the roles of context, actors, and processes in healthy policy making. In addition to exploring the transnational determinants of health, the interests of transnational health actors are examined and the mechanisms by which they wield authority are described and evaluated. By the end of the course, it is expected that

students will 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. *K. Buse.*

HEALTH POLICY AND ADMINISTRATION

HPA 510a, Health Policy and Health Systems. 3 credits. 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. 3 credits. 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. *K. Kronebusch.*

HPA 516a, Clinical Concepts: Individuals, in Sickness and in Health. 2 credits. 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. 1 credit. 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. *W. Kissick.*

HPA 520a, Health Management Practice Engagement. 1 credit. This course is offered in conjunction with the Yale Management Program for Physician's Certificate Course. Each student pairs with a practicing physician to identify and address real-world problems faced by physicians in their practice. Students work with physicians to define management issues, perform analysis, and develop recommendations. Prerequisites: completion of first-year management requirements and permission of the instructor. *W. White.*

HPA 521b, Health Services Epidemiology. 3 credits. Epidemiologic methods and data may be used to understand and improve public health practice, health services research, and health policy. This course emphasizes methodological and conceptual issues through a research-oriented approach to health promotion and disease prevention, the measurement of health status, assessment of health needs and population-based planning, health-related behaviors and beliefs, evaluation of medical practices and health programs, and public health decision making. Prerequisite: first-term core. *A. Ortega.*

HPA 529a, Policy Analysis and Health Politics. 2 credits. 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. *K. Kronebusch.*

HPA 538a, Regulation and Public Health Policy. 3 credits. 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. *M. Olson.*

HPA 542a, Health of Women and Children. 2 credits. The health of women and children in the United States is the focus of this course. The epidemiology of selected health conditions is presented. The utilization and financing of women and children's health care services are discussed. Existing targeted governmental and private programs are

identified and assessed. Major sources of data on the health of women and children are identified and compared. Health care access issues are discussed. Students report on a women's or infant's health care condition and develop a fact sheet with recommendations for addressing the problem. Topics include prenatal care, low birth weight, infant mortality, contraceptive use, abortion, maternal mortality (with an international perspective) and health care coverage for pregnant women and children. Discussion of the public health implications of these health conditions and the health care of women and children provides a basis for policy analysis in later study. *M. A. Lee.*

HPA 544a, Public Law and Public Health: The Law, the Individual, and the State. 2 credits. 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: first-term core. *J. Culhane.*

HPA 546b, Ethical Issues in Public Health. 2 credits. 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 the Management of Health Care Organizations. 2 credits. 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. *W. J. Thomas.*

HPA 560b, Issues in Financing and Reimbursement. 2 credits. 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. *S. Busch.*

HPA 561b, Integrative Seminar in Health Services Management. 2 credits. 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. Enrollment limited; preference given to second-year students. *E. Bradley.*

[**HPA 562b, Health Care Financial Analysis.** 2 credits. 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. *E. Bradley.*]

HPA 564a, Integrated Clinical/Financial Information Management. 2 credits. 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 560b, or equivalent, and accounting are desirable but not required. *D. Diers, S. Allegretto.*

[**HPA 570a, Cost-Effectiveness Analysis and Decision Making.** 2 credits. 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 577b, Quality Management in Health Care. 2 credits. This course examines the development and application of methodologies to evaluate the impact of medical care processes in hospital and managed care settings. The course also examines (1) the regulatory environment confronting health care institutions and their response to these mandates and (2) the application of epidemiologic principles and quality improvement technology to the assessment of both clinical and nonclinical processes and outcomes. Prerequisite: first-term core. *W. Crede.*

HPA 583b, Methods in Health Services Research. 2 credits. 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. *E. Bradley.*

HPA 586b, Microeconomics for Health Care Professionals. 2 credits. 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. *W. White.*

HPA 587a, Health Care Economics. 2 credits. 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. 3 credits. This seminar 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. 2 credits. 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 familiarization with microeconomics is preferred. *J. Sindelar.*

HPA 592a/NUR 723a, Concepts and Principles of Aging. 2 credits. 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. *C. Lyder.*

HPA 596b, Critical Policy Issues in the AIDS Pandemic. 2 credits. This seminar 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 pandemic presents, as well as the sharpened skills in policy analysis that such examination necessarily fosters. Enrollment limited to fifteen to eighteen students. Prerequisite: first-term core. *M. Merson.*

HPA 597b, Integrative Policy Analysis Seminar. 2 credits. This seminar is designed as the capstone educational experience for students concentrating in health policy at EPH, though it is also open to students from other schools who have had previous training or experience in policy analysis. The course has several central themes. The first involves exploring different strategies of policy analysis and associated models of professionalism. The second theme involves the complicated prospects for policy analysis associated with the boundaries between health care defined in a clinical sense and the broader social determinants of health. These issues are studied in a series of applied areas, including substance abuse, family policy, and the community obligations of managed care plans. Prerequisite: HPA 510a or equivalent. *M. Schlesinger.*

HPA 600a and b, Readings in Health Services Research and Policy. 2 credits per term. This seminar explores current and cutting-edge topics in the broad fields of community and personal health services. It is designed to familiarize students with a breadth of research opportunities. Students review existing research projects and critique recent research publications. Prerequisite: doctoral status or permission of the instructor. *Faculty.*

HPA 603b, The Ethical Conduct of Research. 1 credit (half-term). 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. *S. Katz.*

HPA 612a and b, Interface of Health Policy and Clinical Care. 2 credits each term. 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. The course is open to M.D./M.P.H. students, physicians, and others by permission of the instructor. *D. Katz.*

HPA 617a, Colloquium in Health Policy and Health Services Research I. 1 credit. 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. *S. Horwitz.*

HPA 617b, Colloquium in Health Policy and Health Services Research II. 1 credit. 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 instructor. *R. Hoff, S. Horwitz.*

HPA 621b, Advanced Health Services Epidemiology. 3 credits. Epidemiologic methods and data may be used to understand and improve public health practice, health services research, and health policy. The course emphasizes methodological and conceptual issues through a research-oriented approach to health promotion and disease prevention, the measurement of health status, assessment of health needs and population-based planning, health-related behaviors and beliefs, evaluation of medical practices and health programs, and public health decision making. Prerequisite: doctoral status or permission of the instructor. *A. Ortega.*

HPA 650a, Colloquium on Mental Health Services Research I. 1 credit. 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. *S. Horwitz, faculty.*

HPA 650b, Colloquium on Mental Health Services Research II. 1 credit. 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. *B. Druss, S. Horwitz.*

[HPA 683b, Advanced Methods in Health Services Research. 2 credits. This course is designed to augment the Methods in Health Services Research course (HPA 583b). Students learn how to apply commonly used research methods in a diverse research setting. Topics include qualitative methods, complex sampling design, multivariate power estimation, power curves, casual modeling factor analysis, instrument design and validation, and advanced issues in multivariate modeling. Students synthesize these skills in the final project, which is a research paper based on a data set of the student's choice or one provided by the instructor. *E. Bradley.]*

Admissions

MASTER OF PUBLIC HEALTH PROGRAM

Applicants to EPH should have a bachelor's or professional degree from an accredited institution. Candidates must present evidence of commitment to public health, as well as one year of college-level mathematics and either biology, chemistry, or physics. EPH seeks students representing a broad diversity of interests and backgrounds. All M.P.H. applications are reviewed by a departmental admissions committee without regard to financial need.

Application Procedure

Applications should be initiated in the early fall of the year preceding the one in which the candidate seeks admission. Applications are accepted after September 1 and must be postmarked no later than March 1. Candidates with complete applications are notified of action by the end of May.

All applicants are required to submit an official transcript from all post-secondary institutions attended, and official GRE scores from ETS (Educational Testing Service). The GMAT or MCAT may be submitted in lieu of the GRE. In addition, a personal statement, current résumé or CV, and three letters of recommendation are required. A non-refundable \$60 fee must accompany each application.

International Students

Foreign nationals whose undergraduate, graduate, or professional education was obtained from a country where English is not the language of instruction must submit TOEFL scores. International applicants must also submit GRE scores.

Students with Advanced Degrees

Individuals holding a health-related doctoral degree are encouraged to apply to the full sixty-credit M.P.H. program. However, some applicants may choose to apply for a shortened, forty-five-credit program. This must be done at the time of application for admission. The Admissions Committee will act in consultation with the division to which the applicant has applied to determine acceptability for the forty-five-credit program and will notify the applicant in writing.

Joint-Degree Programs

Students with broad-based career goals may build unique specializations between EPH and other Yale graduate and professional schools. Such programs are already in place with the schools of Medicine, Nursing, Forestry & Environmental Studies, and Management, and with the Center for International and Area Studies in the Graduate School of Arts and Sciences.

For all joint-degree programs, students must be admitted through the regular admissions process *by each school*. Students may apply to both schools at the same time, or they may apply to one school during their first academic year at the other. Strict attention should be paid to the application deadlines, which differ among schools.

Areas of Specialization

Applicants to the M.P.H. program must choose an area of specialization from among the six divisions:

Biostatistics: Applicants should have a minimum of two years of college-level calculus.

Chronic Disease Epidemiology: A demonstrated ability in quantitative work is desirable. Applicants may choose from two programs: Chronic Disease Epidemiology or Social and Behavioral Sciences (fall 2002).

Environmental Health Sciences: Candidates must have had college courses in chemistry, biology, and physics.

Epidemiology of Microbial Diseases: Applicants should have a background in the biological sciences and demonstrated quantitative skills.

Global Health: Preference is given to health professionals, as well as social scientists, educators, and other human service professionals with some international experience. Competence in a second language, both spoken and written, is required.

Health Policy and Administration: Students enter this division with previous training in the full range of health professions and all the social sciences. Courses in economics, financial management, and accounting are desirable, particularly for the Management track. *Applicants must indicate preference for the Health Policy or Health Management track.*

MASTER OF SCIENCE DEGREE IN BIOSTATISTICS

Applicants to the M.S. in Biostatistics program must have an undergraduate degree with major emphasis in a quantitative science. At minimum, the applicant should have completed the following:

1. One year of calculus and a course in linear algebra;
2. One-year sequence in mathematical statistics at the level of STAT 241a and 242b.

The Graduate Record Examination is required. Students whose native language is not English must take the TOEFL examination.

Application should be made to the Graduate School of Arts and Sciences by January 2, 2002. As this degree is offered through the Graduate School of Arts and Sciences, final admissions decisions are made by the Graduate School.

DOCTORAL PROGRAMS

The degree of Doctor of Philosophy (Ph.D.) is offered through the Graduate School of Arts and Sciences. Preliminary inquiries should be addressed to the Director of Graduate Studies, PO Box 208034, New Haven CT 06520-8034. Application should be made to the Graduate School of Arts and Sciences by January 2, 2002. Four or five academic years are usually needed for completion. All doctoral candidates must pass comprehensive examinations and design and successfully execute a dissertation prospectus, approved by a dissertation advisory committee, before being admitted to candidacy. There are five divisions in EPH in which doctoral students may choose a specialty: Biostatistics, Chronic Disease Epidemiology, Environmental Health Sciences, Epidemiology of Microbial Diseases, and Health Policy and Administration.

Tuition, Expenses, and Financial Aid

The standard student budget for M.P.H. students for the academic year 2001–2002 is as follows:

Tuition	\$22,250
Student Activity Fee	125
Books and Supplies	1,600
Yale Hospitalization/Specialty Coverage	1,025
Room and Board	9,250
Personal and Transportation	2,650
Stafford Origination and Insurance Fee	<u>1,100</u>
Total Budget	\$38,000

TUITION RATES AND STUDENT STATUS

Full-time M.P.H.

Matriculated EPH students who are enrolled in the 60-credit M.P.H. program and are taking twelve (12) or more credits in a term are considered full-time and must pay for two full years of tuition (4 terms).

Part-time M.P.H.

Matriculated students taking fewer than twelve credits in a term are considered part-time students. Part-time students pay tuition on a per credit basis (\$750 per credit). Part-time students are required to complete the program within five years of matriculation.

Shortened M.P.H. Program for Students with Advanced Degrees

Students completing the 45-credit shortened program pay full tuition for one and a half years (three terms).

Joint-Degree Students

Joint-degree students with the schools of Forestry & Environmental Studies, Management, and Nursing, and with the Center for International and Area Studies in the Graduate School, pay three terms of tuition to each school. The tuition for a given term is paid to the school of residence. Joint-degree students with the School of Medicine pay half the annual School of Medicine tuition to EPH during the year in which they are enrolled at EPH.

Yale Postdoctoral Residents and Fellows

Students in a Yale-affiliated postdoctoral residency or fellowship program who have matriculated in the program pay the full tuition for one and a half years (three terms). Yale-affiliated postdoctoral residents or fellows permitted by the Admissions Committee to enroll in courses *prior to matriculation* will be charged tuition on a per credit basis during the term the course is taken.

Yale Faculty and Staff

Yale faculty and staff that are taking individual courses for credit will be charged tuition on a per credit basis (\$750 per credit) during the term the course is taken. Yale faculty and staff that have matriculated in the M.P.H. program pay the appropriate tuition rate, i.e., full-time, part-time, shortened program, etc.

Auditors

Auditors not affiliated with Yale University pay tuition on a per credit basis (\$750 per credit), and are required to receive the permission of the instructor(s) 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 credit rate to *audit* a course. Permission of the Registrar and the course instructor is required.

A maximum of two courses may be audited during one term. M.P.H. students are not allowed to audit EPH courses.

M.S. in Biostatistics Students

M.S. students are required to pay a minimum of two years full 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 the School of Epidemiology and Public Health 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 2001–2002, the last days for refunding federal student aid funds will be November 3 in the fall term and March 27 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 which occur on or before the end of the first 10 percent of the term (September 17 in the fall term and January 17 in the spring term).
 - b. A rebate of one-half (50 percent) of tuition will be granted for withdrawals which occur after the first 10 percent but on or before the last day of the first quarter of the term (September 29 in the fall term and February 4 in the spring term).

- c. A rebate of one-quarter (25 percent) of tuition will be granted for withdrawals which occur after the first quarter of a term but on or before the day of midterm (October 24 in the fall term and March 1 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 Office of Student Financial Services 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 scholarship and loans; and finally, any remaining balance to the student.
 5. Loan recipients (Stafford, Perkins, Health Loans, or Yale Student Loans) who withdraw are required to have an exit interview before leaving Yale, and should contact the Student Loan Collection Office at 246 Church Street (432.2727) to determine where to go for the interview.

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 and their Web address is <http://www.yale.edu/sfas/>.

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 \$50. The deadline for enrollment is June 22. Application forms will be mailed to all students. For additional information, please contact AMS at the number above or visit their Web site at <http://www.amsweb.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, fees, the Yale Health Plan, and room and board if applicable are due on August 1 for the fall term, and 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, telephone number 203.785.5417. 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 scholarship/grant funds from the School.

LOANS

For 2001–2002, all U.S. citizens or permanent residents of the United States may be eligible to borrow up to \$31,500 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.

SCHOLARSHIPS

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

Students who wish to be considered for Yale University scholarships must provide parental information. This information must be provided by completing the Need Access Disk in addition to the FAFSA, and by submitting copies of parents' federal tax returns.

PART-TIME STUDENTS

Students who are matriculated at EPH and are carrying at least six credits per term are eligible for financial aid and should contact the Financial Aid Office at 203.785.5417.

INTERNATIONAL STUDENTS

International students are not eligible to receive aid from the School or the federal loan programs. There are several supplemental loan programs that international students are eligible to apply for with a qualified U.S. citizen or permanent resident as a cosigner. Contact the Financial Aid Office at 203.785.5417 or by e-mail at eph.finaid@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. Students wishing to change their academic adviser should contact the registrar.

COURSE REGISTRATION

Registration forms are provided by the Registrar's Office at the beginning of each term. The *first week* of each term is considered a shopping period in which students attend classes they are interested in taking. At the end of this shopping period, students must return the completed registration form to the Registrar's Office by the date specified on the academic calendar. Forms submitted after this date are subject to a late registration fee of \$25. *Students may neither add nor drop courses after the registration deadline.*

Students are encouraged to enroll in courses in other Yale schools or departments if there is space available and if the instructor agrees. These courses must be listed on the student's EPH registration form. 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.

For graduate-level courses at Yale, students receive one credit for each hour per week that a course meets; however, no more than three credits are awarded for any course taken outside of EPH.

Undergraduate courses taken at Yale College may not count toward the required credit hours for the M.P.H. degree.

WITHDRAWAL FROM A COURSE

After the shopping period and through midterm, students may withdraw from a course with their adviser's permission. The withdrawal deadline is listed on the academic calendar. *Withdrawing from a course after that deadline will result in a grade of "F."*

A student who wishes to withdraw from a course must request his/her registration form from the Registrar's Office and obtain the adviser's signature. The corrected registration form must be returned to the Registrar's Office signed by the student. The registrar enters "W" (for Withdrawal) on the transcript; the transcript notes that "Withdrawal" is a neutral grade.

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, High Pass, Pass, or Fail. The Internship and the 1-credit (fall) Thesis course are graded as Satisfactory/Unsatisfactory.

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

In very rare cases, students may receive a grade of "Incomplete." 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 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.

ACADEMIC 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.

At midterm each term, instructors of required departmental and divisional courses notify the Committee on Academic Progress of students who are at risk of course failure. The Committee on Academic Progress then notifies the students and directs them to specific sources of 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 courses that are departmental 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.

EXEMPTION FROM REQUIRED COURSES

Decisions about exemption from departmental or divisional required courses are made by the individual course instructors.

Requests for “exemptions” must be made within the first week of the term (and not later than the registration deadline). If the instructor agrees to exempt a student, the registrar must be notified in writing. A grade of “Q” will appear on the transcript for “exempted” courses. No course credits are given for “exempted” courses. Credits must be made up by taking additional courses.

CHANGE OF DIVISION

Division changes may be requested any time during the first year but not later than the registration deadline of the first term of the second year. (Students in the shortened program may request a change of division during the first term of their first year and not later than the registration deadline of their second term.) Students who wish to change divisions must complete the “Change of Division” form (available in the Registrar’s Office), which requires the signature of both division heads as well as the academic advisers. Students must be sure to fulfill all course requirements for the new division.

Because of the number of requirements and the sequencing of courses, *students may not switch into the Health Management Program later than the registration deadline of the first term. Also, students may not switch into the Health Policy Division any later than the registration deadline of the second term of their first year.*

DUAL DIVISIONAL CONCENTRATIONS

Dual divisional concentrations are *strongly discouraged* by the EPH faculty and are approved only in very unusual circumstances.

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.

ACCESS TO RECORDS

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. When a leave of absence has been approved, the student must notify the Financial Aid Office.

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. Policies for tuition rebates are spelled out by the Financial Aid Office. Students wishing to reenter the program after withdrawing must reapply.

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

HEALTH SERVICES

Yale University Health Services (YUHS) is located on campus at the University Health Services Center (UHSC) 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, internal medicine, gynecology, mental health, pediatrics, pharmacy, laboratory, radiology, a twenty-three-bed inpatient care facility (ICF), a twenty-four-hour urgent care clinic, and such specialty services as allergy, dermatology, and orthopedics, among others. 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 comprehensively described in the *YHP Student Handbook*, available through the YHP Member Services Department, 203.432.0246, located at 17 Hillhouse Avenue.

Eligibility for Services

All full-time Yale degree-candidate students who are paying at least half tuition 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 health (mental hygiene). In addition, through the Urgent Care Clinic, treatment for urgent medical problems can be obtained twenty-four hours a day. Students who need more acute care receive services in the ICF.

Students on leave of absence or on extended study and paying less than half tuition 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 fee. Associates must enroll 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 UHSC. 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

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.

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

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 coverage for YHP Basic Coverage and for coverage under 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 (<http://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 coverage for YHP Basic and for the benefits offered under YHP Hospitalization/Specialty Coverage. Prescription Plus Coverage 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 (<http://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 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 fee 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. 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 (<http://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 coverage for YHP Basic and for the benefits offered under 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 (<http://www.yale.edu/uhs/>). Students must complete an enrollment application for the plan prior to the start of the term.

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

Before matriculation, 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 one month 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.

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

RESIDENCE AND DINING FACILITIES

Edward S. Harkness Memorial Hall

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 Hall live in a secure building with newly 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 recreation rooms. All dormitory rooms are furnished, and all rooms must be single occupancy. Dormitory room rental rates are \$3,600 to \$5,200 during the 2001–2002 academic year

(August 2001 to May 2002). One-bedroom apartments with living room, kitchenette, and bathroom are available for singles or couples. The 2001–2002 apartment rate is \$665 per month for streetside apartments, and \$685 per month for courtyard apartments. All rents include Ethernet hook-up and all utilities except telephone and apartment cable television. Apartments are furnished with basic furniture, although many students supplement the existing furniture with their own. There is no cable access in the dormitory building.

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 basement contains student storage with 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 access is provided by membership card scanners. There is no fee for this benefit, but all users are required to register for membership.

For information about Edward S. Harkness Memorial Hall, contact the Harkness dormitory office at 203.737.1960; 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 <http://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 7:30 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. Rates vary, depending upon the program and year of study. The rates for the 2001–2002 academic year are \$2,055.40 for first-year medical students; \$2,043.45 for physician associate students; \$1,828.35 for first-year public health students; and \$1,768.60 or \$1,888.10 for nursing students, depending on their program. The meal plan is a debit-balance system allowing students to spend their board points anytime that the dining room is open. Pricing is à la carte, although for budgeting purposes students must understand that the board amount provides adequate funds for approximately ten meals per week (this varies depending upon individual eating habits). Apartment residents have no required meal plan.

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, 100 Wall Street, PO Box 208305, New Haven CT 06520-8305. Access to the Resource Office is through the College Street entrance to William L. Harkness Hall (WLH). Office hours are Monday through Friday, 8.30 A.M. to 5 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 (<http://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 can 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 students 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 maintains an extensive Web site (<http://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. In addition, OISS maintains an electronic newsletter, which is distributed by e-mail on a regular basis. To subscribe, e-mail your e-mail address and name 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.

THE INTERNATIONAL CENTER

Established in 1949, the International Center of New Haven is a nonprofit community-based organization. The Center's programs are based on the idea that both the international community in Greater New Haven and the local community can benefit from each other. The Center is located at 442 Temple Street, and the office is open from 9 A.M. to 4:30 P.M., Monday through Thursday, and from 9 A.M. to noon on Friday. The work of the International Center is carried out by a small professional staff and by many volunteers in the community. The Center organizes lectures, trips, picnics, and special events, as well as English as a Second Language (ESL) classes, in addition to a number of programs including the International Host Friendship Program, 'Round The World Women, and the International Classroom Project. The International House, a large Tudor mansion located at 406 Prospect Street in New Haven, is the venue of most of the International Center's activities and the home of sixteen students and scholars. Rooms are available for the academic year and summer. For more information on any of these programs, or on International House, telephone 203.432.6460, fax 203.432.6462, e-mail international.centernh@yale.edu, or visit the Web site at <http://www.oiss.yale.edu/icnh/>.

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.

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 785.6918 or 785.4202.

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 785.6918 or 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 F. Pistell, *Associate Dean*
Susan V. 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
Laurie Haskell, *Director*

The Office of Career Services (OCS) 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 with developing effective search strategies.

Workshops and Colloquia

OCS sponsors the Professional Development Series, which includes workshops, seminars, speakers, and informational sessions designed to enhance skills critical to career planning and development, and to conducting an effective job search. Topics include résumé and cover letter preparation, job search strategies, interviewing, salary negotiations, etc.

On-Campus Recruitment

On-campus recruitment at EPH has increased significantly as private, public, and non-profit organizations learn the value of the M.P.H. degree and the quality of Yale's students. The Office of Career Services makes a strong effort to attract and respond to a variety of organizations seeking to hire health professionals. Typically, on-campus

recruitment for graduating students seeking jobs in the private sector takes place in the fall term. Recruitment for government and nonprofit jobs occurs in the spring. Also in the spring term, first-year students have the opportunity to interview with organizations hiring summer interns.

In addition to the formal on-campus recruitment program, students are provided with links to organizations that may not have the resources for a campus recruiting visit but are able to interview students at the organization site. Permanent jobs and internship opportunities are communicated to students by e-mail and the OCS newsletter, and on the job-posting bulletin board located outside the EPH computer labs. Each student has a unique career objective; therefore, students are expected to supplement on-campus recruitment with additional, individualized search efforts. The OCS staff is available to assist students in creating a personalized, efficient job-search strategy.

EPH Career Day

This all-day event provides students an opportunity to interact with approximately forty alumni participating in numerous panels, each with a different focus. This interactive program allows students to explore numerous organizations and the work taking place in them, as well as to develop a network with individuals who will play a key role in internship and postgraduate job search success. Typically Career Day is held in January.

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. OCS helps students with various ways of linking with a preceptor for the internship such as on-campus recruitment, job postings, alumni and faculty leads, or self-identified opportunities.

Online Job Information

As the Internet has become an important job search tool, OCS offers its own Web page (<http://info.med.yale.edu/eph/ocs/>) to provide students with links to organizations and sources of online career information. EPH has registered with JobTrack.com to provide online postings and event scheduling as well as online administration of the on-campus recruitment program. There is a computer available in the Career Library to do online job searches. Students may use it for gathering information regarding jobs and for professional development.

Alumni Database

OCS also has an alumni database that is indexed alphabetically by alumni name, by division, by geographic location, and by class year. Alumni have consistently been willing to assist students in their internship/job search and networking activities, and frequently are the starting point for students undertaking the internship or postgraduate job search.

Career Resource Library

The Office of Career Services maintains a small library with resources to help students during different phases of the job search process. The library contains career planning books and directories as well as listings of current and historical job openings.

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 historical 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, Room 118, 785.3307

Joanne DeBernardo, *Registrar*

The Registrar's Office schedules courses, 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 office. Two days should be allowed for the processing of requests. The cost for an official transcripts is \$3 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 and keys. The Registrar's Office issues locker assignments and keys to the EPH Student Center at 47 College Street.

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*

Stanislav V. Kasl, PH.D., *Co-Director for Research Development*

Joanne M. McGloin, *Associate 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.

Cancer Prevention/Control Research Program

Yale Cancer Center

Susan T. Mayne, PH.D., *Program Leader*

The Cancer Prevention and Control Research Program at the Yale Cancer Center is a large and diverse program in its twelfth year of operation. This program builds on the scientific resources of the Yale School of Medicine and Department of Epidemiology and Public Health, and the membership is strongly multidisciplinary, representing the disciplines of epidemiology and public health, biostatistics, psychology, medical oncology, occupational medicine, nutrition, molecular virology, gynecology, pediatrics, and surgery. General themes within the program include (1) chemoprevention; (2) population-based epidemiologic studies of environmental and other risk factors; (3) molecular/genetic epidemiology; (4) racial disparities; (5) behavioral sciences/psychosocial factors and cancer; and (6) other miscellaneous studies.

The program's major long-term goals are (1) to 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 control research with an emphasis on investigations designed to capitalize on its unique resources.

Center for Interdisciplinary Research on AIDS

Michael Merson, M.D., *Director*

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

The Center for Interdisciplinary Research on AIDS (CIRA) was established in August 1997 with support from the National Institute of Mental Health and the National Institute on Drug Abuse. CIRA conducts research aimed at the prevention of HIV infection and the reduction of the negative consequences of the disease in vulnerable and underserved populations. Faculty from six 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.

Research projects include research on how to frame HIV prevention messages for low-income women; adolescent pregnancy and the risk of contracting sexually transmitted diseases; social networks of injection drug users and methods to prevent HIV infection using those networks; and the diffusion of benefit of syringe-exchange programs to nonsyringe-exchange participants. CIRA-affiliated projects include research on drug abuse among children, HIV counseling and testing, high-risk behavior of HIV-positive drug abusers, and the public health impact and cost-effectiveness of HIV interventions.

Connecticut Women's Health Project

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

The Connecticut Women's Health Project (CWHP) is a series of research projects centered around women and HIV issues. In collaboration with community health centers, hospital clinics, and public health departments in New Haven, Bridgeport, Hartford, and Stamford, Connecticut, its mission is to serve women infected with, or at risk for, HIV and their families through research. CWHP research projects include: a study to understand women's experiences with HIV counseling and testing during pregnancy; a study which follows pregnant and nonpregnant adolescent women, aged 14–19, throughout an 18-month period and obtains information on teens' attitudes and behaviors around health and relationships, focusing in particular on sexual health risks; and a third study, pending funding by NIMH, which involves conducting behavioral interventions with adolescent women in a group prenatal care setting. CWHP staff include Jeannette R. Ickovics, Ph.D., Director & Associate Professor of Epidemiology and Public Health; Jessica Lewis, Associate Director; and other research staff members. More information on the center is available from Jessica Lewis at jessica.lewis@yale.edu.

Emerging Infections Program

James I. Meek, M.P.H., *Project Manager*

Ruthanne Marcus, M.P.H., *Director, Foodborne Illness Project*

The Connecticut Emerging Infections program 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 program are to assess the

public health impact of emerging infections and to evaluate methods for their prevention and control. Its projects include: active population-based laboratory surveillance for invasive disease caused by antibiotic resistance *pneumococci* and group A and B *streptococci*; population-based prospective surveillance of unexplained severe illness and death in previously healthy people; active surveillance of human infections from *Ebrlichia*; laboratory surveillance and geographical information system analysis to define risk factors for acquisition of *cryptosporidiosis* and active laboratory surveillance to define the epidemiology, risk factors for acquisition, and the magnitude of foodborne illness caused by bacterial pathogens caused by *E. coli*.

Genetic Epidemiology Research Unit

Kathleen Ries Merikangas, PH.D., *Director*

The central themes of the research in the Genetic Epidemiology Research Unit (GERU) are identification of familial patterns and risk factors for emotional and behavioral disorders and general health in adults and children. Current research projects include the following: (1) a study of children at high risk for the development of anxiety disorders and substance abuse; (2) a study of patterns of health and behavior in African American families; and (3) a migrant study of Puerto Ricans in Connecticut and Puerto Rico. Recent work focuses on the development of prevention programs for mental illness in children and adolescents.

Yale Perinatal Epidemiology Unit

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

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

Elizabeth Triche, PH.D., *Associate Research Scientist*

The Perinatal Epidemiology Unit (PEU) is a research facility established in 1979 to conduct population-based studies concerning the health and well-being of pregnant women, their newborns and infants. The PEU is currently conducting studies on nutrition in pregnancy, a range of environmental risks factors, and the delivery of antenatal services and pregnancy management for their influence on fetal development and survival.

Of major interest are studies of asthma in pregnancy and early infancy, particularly the interaction of the genotype with environmental risk factors that lead to early onset and more severe asthma in young children. Studies are also being conducted on the causes of pre-eclampsia, which continues to be a leading cause of morbidity in pregnancy.

Summer internships and thesis topics are the principal ways in which students become involved in the work of the unit.

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 Centre for Health Promotion Policy and Research

Lowell S. Levin, ED.D., M.P.H., *Director*

The role of this collaborating center established in 1990 is to strengthen our understanding of the contribution of diverse public policies to the promotion of the health of populations. Applying the appropriate resources of the Department of Epidemiology and Public Health, as well as the University as a whole, the center began to accumulate practical on-the-ground experience with policy studies in Italy, Spain, Slovenia, and (formerly East) Germany in association with WHO/EURO (the Health Promotion and Investment Unit) and the Office for Public Management, London. Center resources were organized on behalf of these "health investment" demonstration projects, which, in turn, have profoundly affected the center's modus operandi, including support services, "rapid response" strategies, selection of center scholars, and both internal and external networking. The center has also begun to formulate a new role as an educational training resource for other WHO regional offices with an interest in intersectoral policy approaches to achieving health promotion goals. In effect, the first four years of the center's work established a clear and solid perspective on its role as a collaborating center. The process of collaboration allows substantial benefits to accrue both to WHO and to the Department of Epidemiology and Public Health in its teaching, research, and service responsibilities.

Prevention Research Center at Griffin Hospital

James F. Jekel, M.D., *Director*

On October 1, 1998, EPH established the Prevention Research Center (PRC) at an affiliated community site, the Griffin Hospital in Derby, Connecticut. The PRC builds on Yale's extensive experience in community health promotion and expands its established relationship with Griffin Hospital from a residency affiliated program to a satellite community site for the Department of Epidemiology and Public Health. This expanded partnership will bridge the gap between academic research and clinical outcomes targeting the Griffin Hospital service area for testing and assessing the efficacy of innovative health promotion and disease prevention research initiatives.

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.

EPHSO is headed by an Executive Committee consisting of a president, two vice-presidents, treasurer, and secretary. The organization consists of a thirteen-member voting council. There are twelve divisional representatives; each division elects one first-year and one second-year student. 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.

DEPARTMENTAL COMMITTEES

Student representatives serve on the following EPH departmental committees: Curriculum Committee, Disciplinary Committee, and Minority Affairs Committee.

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)

As a member of the graduate community at Yale, students are automatically considered part of the Senate. The Senate is the representative body of graduate and professional students and acts as a forum to discuss concerns of graduate and professional students, as well as University-wide issues. The GPSS also oversees the publishing of its newsletter, the Yale Graduate Professional. Student representatives are selected based on a written application to serve on GPSS and University committees including the Committee on Graduate and Professional Student Senate, Yale College Council Relations, Committee for People of Color, Committee on Student Income, Budget Committee, Yale Corporation Committee, Graduate and Professional Newsletter Advisory Committee, Alumni Relations Committee, Town-Gown Relations Committee, and the Committee for Political Action.

SPECIAL INTEREST GROUPS

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.

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 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

The Committee Overseeing Volunteer Services (COVS)

The Health Professions Schools of Yale University have long recognized the importance of contributing to the local community. COVS programs offer students the opportunity to develop the professional ethics they will bring to their practices while working with fellow students from health care disciplines different from their own. Students from EPH, the School of Medicine, the School of Nursing, and the Physician Associate Program coordinate programs that work collaboratively with public schools, local agencies, and the Yale-New Haven Hospital to provide health care services in the community.

Most programs can accommodate different levels of time commitment and each project addresses a distinct need identified by the community.

Examples of some projects are:

- Adolescent Substance Abuse Prevention (ASAP)
- Anatomy Training Program (ATP)
- Buddies Just for Kids (BJFK)
- Career High School Nurse Aids Class Mentor Program
- Health Professional at the Downtown Evening Soup Kitchen (DESK)
- Health Professions Recruitment and Exposure Program (HPREP)
- Homeless Outreach Program for Enrichment (HOPE)
- Neighborhood Health Education Project (NHEP)
- Prenatal Care Project
- Science Tour Enrichment Program (STEP)
- Students Teaching AIDS to Students (STATS)
- Youth Science Enrichment Program (YSEP)

Appendix I: Thesis Guidelines for Students Matriculated Prior to September 2001

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 and Paper

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 × 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. Twenty-pound paper for bound theses is recommended.

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.

SUPERVISION

The type of thesis, choice of topic, and details of methodology are the joint responsibility of the student and the thesis adviser. The thesis adviser is determined by mutual consent of the persons involved 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 and another faculty member (second reader). The second reader need not be an expert in the field, but may be a generalist. The second reader must have a faculty appointment at Yale University or elsewhere but does not have to have an appointment at EPH. The Committee on Academic Progress must review the C.V. of a non-Yale faculty member serving as a second reader.

GRADING

M.P.H. students register for the 1-credit thesis course in the fall term of their second year and receive a grade of Satisfactory when the "Reader Responsibility" forms are completed and returned to the Registrar's Office. "Reader Responsibility" forms must be signed by both readers.

In the spring term, students must register for the 5-credit thesis course. Two copies of the thesis and "Report of Readers (Grading)" forms from both readers must be submitted to the Registrar's Office no later than **May 15** in order to receive an M.P.H. degree.

Later submissions will be considered “thesis pending” (see below). Each thesis must receive two grades of Pass or better to fulfill the degree requirement.

TIMELINE

Students should follow the timetable as a guide to completing the thesis. These represent minimal requirements; students should be sure to adhere to any specific divisional timelines.

September–November

1. Thesis adviser chosen by student.
2. Detailed prospectus and outline approved by the thesis adviser.
3. Second reader chosen.
4. Reader’s Responsibility Forms signed and returned to the registrar. *Reader’s Responsibility Forms are due by December 1.* The Committee on Academic Progress approves the readers and thesis topic after the Reader’s Responsibility Forms are submitted.

February–March

Complete preliminary draft submitted to the thesis adviser. The thesis adviser suggests revisions, if needed. Revised copy of the thesis is resubmitted to the thesis adviser and second reader. Readers will suggest additional revisions if necessary.

May

Completed readers’ report forms from both readers and two unbound copies of the thesis are due in the Registrar’s Office no later than May 15, 2002.

DELAYED SUBMISSION OF THESIS (THESIS PENDING)

Readers may advise the student to defer submission of the final thesis or the student may elect to complete the thesis requirement at a later time. In such cases the student may submit two copies of the thesis with readers’ report forms from both readers, *before* the beginning of the fall term without incurring a late charge. The student is recommended for the degree through the usual process and the degree is awarded in December. Students who do not complete the thesis before the beginning of the fall term must pay a late thesis fee of \$600 at the time of final submission. Students must complete the thesis within five years of the date of matriculation.

Students who have successfully completed all other academic requirements but are “thesis pending” may participate with their class in the graduation ceremonies; however, they do not receive diplomas at that time.

DEAN’S PRIZE FOR OUTSTANDING THESIS

The Dean’s Prize for Outstanding Thesis may be awarded to a small number (maximum of four) of students for extraordinary academic achievement on the M.P.H. thesis. Thesis readers who recognize a student’s work as exceptional may nominate the student for this prize. Three emeritus faculty members read the nominated theses. Winners are announced at the EPH Commencement ceremony. Students on “thesis pending” status are not eligible to receive the Dean’s Prize.

Appendix II: Thesis Guidelines for Students Matriculated September 2001 and Later

Guidelines are the same for Appendix I and Appendix II, with the following changes for students matriculated September 2001 and later.

TIMELINE FOR M.P.H. THESIS

First Year

April 1 – Divisional Meetings (each division to discuss their standards and requirements, and the timeline for completion).

Second Year

September 10 – Divisional Meeting.

October 15 – Adviser/reader forms due to the registrar (Committee on Academic Progress to approve advisers, readers, and topics).

November 1 – First Prospectus (if necessary) due. Prospectus to be graded Satisfactory/Unsatisfactory. Student must receive a Satisfactory in order to receive the one credit in the third term. If a grade of Unsatisfactory is received, the student forfeits the credit and must make it up in the final term.

February 15 – First draft due.

April – Second draft due.

May 1 – Final draft due.

May 15 – Grades and two final, unbound copies of the thesis are due to the registrar. Students who have not completed the thesis by this date will receive a grade of Incomplete on their transcripts. Only students who have completed all required M.P.H. courses (including the thesis) may participate in the Commencement ceremony.

DELAYED SUBMISSION OF THESIS (THESIS PENDING)

Students who are “thesis pending” will receive a grade of incomplete (“I”) on the transcript and have one year to finish the thesis. If the thesis remains incomplete at the end of the one-year period, the grade of “I” will be changed to a grade of “F” on the student’s transcript. The student must re-register for the thesis, pay the per-credit tuition charge (\$750/credit), and complete it successfully in order to receive the M.P.H. degree. All M.P.H. degree requirements including the thesis must be completed within five years of the student’s date of matriculation.

Only students who have completed all required M.P.H. courses (including the thesis) may participate in the Commencement ceremony. Requests for exceptions to this policy (i.e., circumstances completely beyond control of the student) will be reviewed by the Committee on Academic Progress.

TITLE OF THESIS, DOUBLE-SPACED

By

Name of Student

Highest Previous Degree Institution Year

(If applicable) Previous Degree Institution Year

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

2002

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 III: 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. This penalty may be recorded on the student's transcript.
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 and alcohol 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 Dean of Public Health, the office of the Associate Dean for Student Affairs, and the offices of Division Heads. In addition, a copy of the Code and Procedures shall be sent to any student charged with a violation of the Code.

The Dean of Public Health 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.) The Yale College Executive Committee does not assign grades in courses. Grades at Yale are the prerogative of individual instructors. A finding of academic dishonesty in a course, however, usually has resulted in a student's failure to pass the course, or in the assignment of a lower grade.

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. Cheating is also still equally cheating, plagiarism still equally plagiarism, for example, in a course you are taking on the CR/D/Fail option in order to fulfill a distributional requirement. 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. Yale College distributes it as a supplement to the *Undergraduate Regulations*, and you are as responsible for knowledge of its contents as you are for knowledge of the provisions of the *Undergraduate Regulations*.

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.

The Work of Yale University

The work of Yale University is carried on in the following schools:

Yale College: Courses in humanities, social sciences, natural sciences, mathematical and computer sciences, and engineering. Bachelor of Arts (B.A.), Bachelor of Science (B.S.), Bachelor of Liberal Studies (B.L.S.).

For additional information, please write to the Office of Undergraduate Admissions, Yale University, PO Box 208234, New Haven CT 06520-8234; telephone, 203.432.9300; e-mail, undergraduate.admissions@yale.edu; Web site, www.yale.edu/admit/

Graduate School of Arts and Sciences: Courses for college graduates. Master of Arts (M.A.), Master of Science (M.S.), Master of Philosophy (M.Phil.), Doctor of Philosophy (Ph.D.).

For additional information, please write to the Yale Graduate School of Arts and Sciences, PO Box 208323, New Haven CT 06520-8323; telephone, 203.432.2770; e-mail, graduate.admissions@yale.edu; Web site, www.yale.edu/gradsch/grad/

School of Medicine: Courses for college graduates and students who have completed requisite training in approved institutions. Doctor of Medicine (M.D.). Postgraduate study in the basic sciences and clinical subjects. Courses in public health for qualified students. Master of Public Health (M.P.H.), Master of Medical Science (M.M.Sc.) from the Physician Associate Program.

For additional information, please write to the Director of Admissions, Office of Admissions, Yale University School of Medicine, 367 Cedar Street, New Haven CT 06510; telephone, 203.785.2643; fax, 203.785.3234; e-mail, medical.admissions@yale.edu; Web site, www.info.med.yale.edu/medadmit/

For additional information about the Department of Epidemiology and Public Health, an accredited School of Public Health, please write to the Director of Admissions, Department of Epidemiology and Public Health, Yale School of Medicine, PO Box 208034, New Haven CT 06520-8034; e-mail, maria.dino@yale.edu; Web site, www.info.med.yale.edu/eph/

Divinity School: Courses for college graduates. Master of Divinity (M.Div.), Master of Arts in Religion (M.A.R.). Individuals with an M.Div. degree may apply for the program leading to the degree of Master of Sacred Theology (S.T.M.).

For additional information, please write to the Admissions Office, Yale University Divinity School, 409 Prospect Street, New Haven CT 06511; telephone, 203.432.5360; fax, 203.432.5356; e-mail, ydsadmsn@yale.edu; Web site, www.yale.edu/divinity/

Law School: Courses for college graduates. Juris Doctor (J.D.). For additional information, please write to the Admissions Office, Yale Law School, PO Box 208329, New Haven CT 06520-8329; telephone, 203.432.4995; e-mail, admissions.law@yale.edu; Web site, www.law.yale.edu/

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/

School of Art: Professional courses for college and art school graduates. Master of Fine Arts (M.F.A.).

For additional information, please write to the Office of Academic Affairs, Yale School of Art, PO Box 208339, New Haven CT 06520-8339; telephone, 203.432.2600; e-mail, artschool.info@yale.edu; Web site, www.yale.edu/art/

School of Music: Graduate professional studies in performance, composition, and conducting. Certificate in Performance, Master of Music (M.M.), Master of Musical Arts (M.M.A.), Artist Diploma, Doctor of Musical Arts (D.M.A.).

For additional information, please write to the Yale School of Music, PO Box 208246, New Haven CT 06520-8246; telephone, 203.432.4155; fax, 203.432.7448; e-mail, gradmusic.admissions@yale.edu; Web site, www.yale.edu/schmus/

School of Forestry & Environmental Studies: Courses for college graduates. Master of Forestry (M.F.), Master of Forest Science (M.F.S.), Master of Environmental Science (M.E.Sc.), Master of Environmental Management (M.E.M.), Doctor of Forestry and Environmental Studies (D.F.E.S.).

For additional information, please write to the Office of Academic Services, Yale School of Forestry & Environmental Studies, 205 Prospect Street, New Haven CT 06511; telephone, 800.825.0330 or 203.432.5100; e-mail, fesinfo@yale.edu; Web site, www.yale.edu/environment/

School of Architecture: Courses for college graduates. Professional degree: Master of Architecture (M.Arch.); nonprofessional degree: Master of Environmental Design (M.E.D.).

For additional information, please write to the Yale School of Architecture, PO Box 208242, New Haven CT 06520-8242; telephone, 203.432.2296; e-mail, gradarch.admissions@yale.edu; Web site, www.architecture.yale.edu/

School of Nursing: Courses for college graduates. Master of Science in Nursing (M.S.N.), post master's certificate, Doctor of Nursing Science (D.N.Sc.).

For additional information, please write to the Yale School of Nursing, PO Box 9740, New Haven CT 06536-0740; telephone, 203.785.2389; Web site, www.nursing.yale.edu/

School of Drama: Courses for college graduates and certificate students. Master of Fine Arts (M.F.A.), Certificate in Drama, One-year Technical Internship (Certificate), Doctor of Fine Arts (D.F.A.).

For additional information, please write to the Registrar's Office, Yale School of Drama, PO Box 208325, New Haven CT 06520-8325; telephone, 203.432.1507; Web site, www.yale.edu/drama/

School of Management: Courses for college graduates. Professional degree: Master of Business Administration (M.B.A.).

For additional information, please write to the Admissions Office, Yale School of Management, PO Box 208200, 135 Prospect Street, New Haven CT 06520-8200; telephone, 203.432.5932; fax, 203.432.7004; e-mail, mba.admissions@yale.edu; Web site, www.yale.edu/som/

The University is committed to basing judgments concerning the admission, education, and employment of individuals upon their qualifications and abilities and affirmatively seeks to attract to its faculty, staff, and student body qualified persons of diverse backgrounds. In accordance with this policy and as delineated by federal and Connecticut law, Yale does not discriminate in admissions, educational programs, or employment against any individual on account of that individual's sex, race, color, religion, age, disability, status as a special disabled veteran, veteran of the Vietnam era, or other covered veteran, or national or ethnic origin; nor does Yale discriminate on the basis of sexual orientation.

University policy is committed to affirmative action under law in employment of women, minority group members, individuals with disabilities, special disabled veterans, veterans of the Vietnam era, and other covered veterans.

Inquiries concerning these policies may be referred to Frances A. Holloway, Director of the Office for Equal Opportunity Programs, 104 W. L. Harkness Hall, 203.432.0849.

In accordance with both federal and state law, the University maintains information concerning current security policies and procedures and prepares an annual crime report concerning crimes committed within the geographical limits of the University. Upon request to the Office of the Secretary of the University, PO Box 208230, New Haven CT 06520-8230, 203.432.2310, the University will provide such information to any applicant for admission.

In accordance with federal law, the University prepares an annual report on participation rates, financial support, and other information regarding men's and women's intercollegiate athletic programs. Upon request to the Director of Athletics, PO Box 208216, New Haven CT 06520-8216, 203.432.1414, the University will provide its annual report to any student or prospective student.

For all other information relating to admission to the Department of Epidemiology and Public Health, please telephone 203.785.2844, or write to the Admissions Office, Epidemiology and Public Health, 60 College Street, PO Box 208034, New Haven CT 06520-8034.

BULLETIN OF YALE UNIVERSITY
New Haven CT 06520-8227

Periodicals postage paid
New Haven, Connecticut

