PUBLIC HEALTH

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FIELDS OF STUDY
Programs of study are offered in the areas of Biostatistics, Chronic Disease Epidemiology, Social and Behavioral Sciences, Environmental Health Sciences, Epidemiology of Microbial Diseases, Health Policy and Management, and Health Informatics.

SPECIAL ADMISSIONS REQUIREMENTS
Applicants should have a strong background in the biological and/or social sciences. Students pursuing a Biostatistics specialty should have a strong background in mathematics. The GRE General Test is required. The TOEFL is required of all applicants whose native language is not English. IELTS scores are also accepted in addition to or in lieu of TOEFL scores. This requirement is waived only for applicants who, prior to matriculation at Yale, will have received a baccalaureate degree or its foreign equivalent from a college or university where English is the primary language of instruction. Applicants must have studied in residence at the baccalaureate institution for at least three (3) years to receive the waiver. Applicants who do not qualify for a waiver but have taken the TOEFL within the past two years will need to have their TOEFL scores released to the Yale Graduate School of Arts and Sciences (code 3987).

ACADEMIC REQUIREMENTS
Generally the first two years of the Ph.D. program are devoted primarily to course work and rotations for students in some areas. All doctoral students are required to successfully complete a minimum of ten graduate-level courses and must satisfy the individual departmental requirements, detailed below. Courses such as Dissertation Research, Preparing for Qualifying Exams, Research Ethics and Responsibility, or Seminar do not count toward the course requirements. However, students must register for these “courses” in order for them to appear on the transcript.

All first-year students must enroll in and complete training in Research Ethics and Responsibility (EPH 600). This course will introduce and prepare students for responsible conduct in research, including data acquisition and management, mentor/trainee responsibilities,
publication practices and authorship standards, scientific misconduct, and conflict of interest. Research Ethics and Responsibility is offered annually and is graded Satisfactory/Unsatisfactory.

The Graduate School uses grades of Honors, High Pass, Pass, or Fail. Students are required to earn a grade of Honors in at least two full-term courses and are expected to achieve a High Pass average. (This applies to courses taken after matriculation in the Graduate School and during the nine-month academic year.)

Teaching and research experiences are regarded as an integral aspect of the graduate training program. All students are required to serve as teaching fellows for a minimum of two terms, typically during years two and three. With the permission of the director of graduate studies (DGS), the total teaching requirement beyond two terms may be reduced for students who are awarded fellowships supported by outside funding or who are graduate research assistants in year three. Other exceptions may be granted after two terms of teaching are completed, with the approval of the DGS. During the first term of teaching, students must attend a training session conducted by the Center for Teaching and Learning. First-year students are encouraged to focus their efforts on course work and are not permitted to serve as teaching fellows.

**Required Course Work**

**BIOSTATISTICS**

Ph.D. students in the Department of Biostatistics (BIS) must complete a minimum of fifteen courses (not including BIS 525, BIS 610, BIS 695, and EPH 600). Course waivers must be recommended by the academic adviser and approved by the DGS.

Required courses (or their equivalents) are: both terms of BIS 525, Seminar in Biostatistics and Journal Club; BIS 571, Computational Statistics; BIS 577, Bayesian Statistics; BIS 610, Applied Area Readings for Qualifying Exams; BIS 628, Longitudinal and Multilevel Data Analysis; BIS 643, Theory of Survival Analysis; BIS 646, Nonparametric Statistical Methods and Their Applications; BIS 678, Statistical Practice I; BIS 681, Statistical Practice II; BIS 691, Theory of Generalized Linear Models; BIS 695, Summer Internship in Biostatistical Research; EPH 508, Foundations of Epidemiology and Public Health; S&DS 610, Statistical Inference; S&DS 612, Linear Models; EPH 600, Research Ethics and Responsibility; and EPH 608, Frontiers of Public Health. Students entering the doctoral program with an M.P.H. are exempt from EPH 608. Students with prior graduate-level epidemiology courses may be exempt from EPH 508.

In consultation with their academic adviser, students choose a minimum of three additional electives that will best prepare them for dissertation work.

Students funded by specific fellowships may be subject to additional requirements and should discuss this with their adviser.

**CHRONIC DISEASE EPIDEMIOLOGY**

Ph.D. students in the Department of Chronic Disease Epidemiology (CDE) must complete a minimum of sixteen courses (not including CDE 610 and EPH 600). Course waivers must be recommended by the academic adviser and approved by the DGS. Students must complete course work that introduces them to the breadth of public health (EPH 608, Frontiers of Public Health). Students entering the doctoral program with an M.P.H. may be exempt from EPH 608. Required courses (or their equivalents) are: CDE 502, Physiology for Public Health; EPH 508, Foundations of Epidemiology and Public Health; CDE 516, Principles of Epidemiology II; CDE 534, Applied Analytic Methods in Epidemiology; CDE 610, Applied Area Readings for Qualifying Exams; CDE 617, Developing a Research Proposal*; CDE 619, Advanced Epidemiologic Research Methods; and CDE 650, Introduction to Evidence-Based Medicine and Health Care. In addition, in consultation with their dissertation adviser, students choose three 600-level course units in Biostatistics† (or equivalent as approved by the adviser and the DGS) as well as five additional electives that will best prepare them for their dissertation research.

**SOCIAL AND BEHAVIORAL SCIENCES**

Ph.D. students in the Social and Behavioral Sciences (SBS) must complete a minimum of fourteen courses (not including EPH 600 and SBS 610) from the following courses or their equivalents. Course waivers must be recommended by the academic adviser and approved by the DGS. Students must complete course work that introduces them to the breadth of public health (EPH 608, Frontiers of Public Health). Students entering the doctoral program with an M.P.H. may be exempt from EPH 608. Required courses (or their equivalents) are: EPH 508, Foundations of Epidemiology and Public Health; CDE 516, Principles of Epidemiology II; CDE 534, Applied Analytic Methods in Epidemiology; CDE 617, Developing a Research Proposal*; SBS 580, Qualitative Research Methods in Public Health; SBS 610, Applied Area Readings for Qualifying Exams; SBS 676, Questionnaire Development; and SBS 699, Advanced Topics in Social and Behavioral Sciences. In addition, in consultation with their dissertation adviser, students choose three advanced-level (600 or above) statistics courses (from Biostatistics, Psychology, Political Science, Sociology, or Statistics and Data Science†) as well as three additional electives that will best prepare them for their dissertation research.

Students supported by training grants may be subject to additional requirements and should discuss whether there are training-specific requirements with the principal investigator of the grant.

* CDE 617 is not required of students funded by the Interdisciplinary HIV Prevention Training Grant. Those students must take a fourth elective in order to meet the sixteen-course requirement.

† S&DS 693, Multivariate Statistical Methods for the Social Sciences, is an option to fulfill the statistics course requirement.
ENVIRONMENTAL HEALTH SCIENCES

Ph.D. students in Environmental Health Sciences must take a minimum of thirteen courses (more may be required by a student’s adviser). Students have a choice of two concentrations: Environmental Epidemiology and Exposure Science, and Environmental and Molecular Toxicology. For both concentrations, required courses are: EPH 505, Biostatistics in Public Health; EPH 508, Foundations of Epidemiology and Public Health; EHS 503, Public Health Toxicology; EHS 507, Environmental Epidemiology; EHS 508, Environmental and Occupational Exposure Science; EHS 545, Molecular Epidemiology; EHS 525, Seminar and Journal Club in Environmental Health; and EPH 600, Research Ethics and Responsibility. Students must also complete course work that introduces them to the breadth of public health (EPH 608, Frontiers of Public Health). Students entering the doctoral program with an M.P.H. may be exempt from EPH 608. Ph.D. students enrolled in EHS 503 and EHS 525 may be assigned additional readings. (EHS 525 and EPH 600 do not count toward the required thirteen courses.)

In addition, all students are required to complete two research rotations during the first year: EHS 620 (total of two units). At the end of the lab rotation students give a presentation and are graded based on their rotation work and presentation.

Students specializing in Environmental Epidemiology and Exposure Science must choose a minimum of four electives from the following: BIS 623, Applied Regression Analysis; BIS 625, Categorical Data Analysis; BIS 628, Longitudinal and Multilevel Data Analysis; CDE 516, Principles of Epidemiology II; CDE 520, Case-Based Learning for Genetic and Environmental Diseases; CDE 617, Developing a Research Proposal; EHS 502, Physiology for Public Health; EHS 511, Principles of Risk Assessment; EHS 547, Climate Change and Public Health; EHS 562, Applications in Systems Biology in Public Health; F&ES 755, Modeling Geographic Space; and F&ES 756, Modeling Geographic Objects.

Students specializing in Environmental and Molecular Toxicology must choose a minimum of four electives from the following: EHS 502, Physiology for Public Health; EHS 511, Principles of Risk Assessment; EHS 537, Water, Sanitation, and Global Health; EHS 547, Climate Change and Public Health; EHS 562, Applications in Systems Biology in Public Health; CDE 520, Case-Based Learning for Genetic and Environmental Diseases; and CDE 617, Developing a Research Proposal.

EPIDEMIOLOGY OF MICROBIAL DISEASES

Ph.D. students in the Department of Epidemiology of Microbial Diseases (EMD) must complete a minimum of ten courses (not including EPH 600). Course waivers must be recommended by the academic adviser and approved by the DGS.

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 research rotations is developed by the student and the student’s academic adviser. All students are required to complete three distinct research rotations. These are done in the fall and spring terms and in the summer between the first and second years. Students will be asked to prepare a brief presentation at the end of each rotation. These research rotations (EMD 670) are graded and account for three of the required ten courses. Student progress is reviewed at the end of each academic year.

Students are required to complete course work in epidemiology (EPH 508, Foundations of Epidemiology and Public Health; or CDE 516, Principles of Epidemiology II). In addition, students must complete course work that introduces them to the breadth of public health (EPH 608, Frontiers of Public Health). Students entering the doctoral program with an M.P.H. may be exempt from EPH 608. Students with prior graduate-level epidemiology courses may be exempt from course work in epidemiology.

The following courses are suggested as appropriate for Ph.D. students in EMD; however, other courses in Public Health or in other schools or departments may also be appropriate: EMD 538, Quantitative Methods for Infectious Disease Epidemiology; EMD 539, Introduction to Public Health Surveillance; EMD 543, Global Aspects of Food and Nutrition; EMD 548, Observing Earth from Space; EMD 550, Biology of Infectious Diseases; EMD 553, Transmission Dynamic Models for Understanding Infectious Diseases; EMD 567, Tackling the Big Three: Malaria, TB, and HIV in Resource-Limited Settings; EMD 680, Advanced Topics in Tropical Parasitic Diseases; CDE 617, Developing a Research Proposal; HPM 570, Cost-Effectiveness Analysis and Decision-Making; and S&D 538, Probability and Statistics.

HEALTH POLICY AND MANAGEMENT

Ph.D. students in the Department of Health Policy and Management (HPM) are required to develop expertise in one of three disciplinary concentrations – Economics; Organizational Theory and Management; or Political and Policy Analysis – and then to apply this discipline to a more specialized area; the latter becomes their area of distinction.

Students are required to complete the course work detailed below, or the equivalent of the topic areas covered in these courses. The course listing represents a suggested program of study. The standard number of courses taken is eighteen, with the option of obtaining credits for previous courses. With the approval of the academic adviser and DGS, alternative courses that better suit the needs of the student may satisfy the course work requirement. The departmental representative to the Graduate Student Executive Committee (GSEC), in conjunction with the student's adviser, is responsible for determining if core course requirements have been satisfied by previous course work or alternative courses. If so, the student should apply for a course waiver through the Graduate School. HPM students can only waive up to two of the eighteen courses.

Courses required of all students are: EPH 600, Research Ethics and Responsibility (does not count toward the total number of required courses); both terms of HPM 617, Colloquium in Health Services Research (does not count toward the total number of required
Special Requirements for the Ph.D. Degree

At the end of years one and two, advisers will be asked to complete a progress report for each student evaluating the student's academic progress and describing the student's readiness for teaching and/or conducting research. This is then discussed with the student and reviewed by the DGS. Students who have not progressed adequately will be asked to meet with the DGS to address the situation.

The qualifying exam is typically taken by the end of the second full academic year. With the assistance of the faculty adviser, generally after qualifying exams, each student requests appropriate faculty members to join a dissertation advisory committee (DAC). The DAC reviews and approves the prospectus as developed by the student and submits it to the DGS and the Graduate Studies Executive Committee for approval. The dissertation prospectus must be approved by the end of the third year.

To be admitted to candidacy, students must: (1) satisfactorily complete the course requirements for their department as outlined above, achieve grades of Honors in at least two full-term courses, and achieve an overall High Pass average; (2) obtain an average grade of High Pass on the qualifying exam; and (3) have the dissertation prospectus approved by the Graduate Studies Executive Committee. Students who have been admitted to candidacy are required by the Graduate School to complete an annual Dissertation Progress Report.

Each DAC is expected to meet as a group at least twice each year, and more frequently if necessary. The student schedules meetings of the DAC. The chair/adviser of the DAC produces a summary evaluation of progress and plans for the next six months. This document is to be distributed to each committee member for comments, and the student and the DGS are to receive a copy of the final document. The DAC reviews the progress of the dissertation research and decides when the dissertation is ready to be submitted to the readers. This decision is based on a closed defense of the dissertation, which involves a formal oral presentation to the DAC and other invited faculty. Upon completion of the closed defense, the chair/adviser of the DAC submits the recommendation to the DGS along with the names of three appropriate readers.

Doctoral dissertations originating in Public Health must also 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

courses); EPH 508, Foundations of Epidemiology and Public Health; and EPH 608, Frontiers of Public Health. Students entering the program with an M.P.H. degree may be exempt from EPH 508 and EPH 608.

HPM 610, Applied Area Readings, is required of all second-year students. Students are also expected to attend the departmental research seminar for faculty and the doctoral research seminar.


In Health Policy and Management, a minimum of four courses, all with Ph.D. readings, are required from the following: EPH 510, Health Policy and Health Care Systems; HPM 514, Health Politics, Governance, and Policy; HPM 560, Health Economics and U.S. Health Policy; HPM 561, Managing Health Care Organizations; HPM 570, Cost-Effectiveness Analysis and Decision-Making; HPM 573, Advanced Topics in Modeling Health Care Decisions; HPM 587, Advanced Health Economics; HPM 590, Addiction, Economics, and Public Policy; and HPM 597, Capstone Course in Health Policy.

Disciplinary Concentrations

Students in HPM must complete a minimum of four courses, all with Ph.D. readings, in their chosen disciplinary concentration.

In Economics, required courses are: ECON 545, Microeconomics; and ECON 558, Econometrics (which may count as a Methods and Statistics class or as a disciplinary concentration class, but not both). In addition, students are required to take two field courses in a concentration area in which they plan to develop expertise. In Behavioral Economics, two courses such as: MGMT 728, Foundations of Behavioral Economics; and PSYC 554, Behavioral Decision-Making II: Judgment. In Industrial Organization: ECON 600, Industrial Organization I; and ECON 601, Industrial Organization II. In Labor Economics, ECON 630, Labor Economics I; and ECON 631, Labor Economics II. In Public Finance, two courses from: ECON 556, Topics in Empirical Economics and Public Policy; ECON 680, Public Finance I; and ECON 681, Public Finance II. In consultation with the student's adviser, other courses may be substituted.

In Organizational Theory and Management, four courses are required, selected in consultation with the student's adviser.

In Political and Policy Analysis, four courses are required, selected in consultation with the student's adviser. Suggested courses are: PLSC 800, Introduction to American Politics; PLSC 801, Political Preferences and American Political Behavior; and PLSC 803, American Politics III: Institutions.

HPM students take qualifying exams in each of three areas: (1) health policy and management; (2) empirical analysis and/or statistics; and (3) the student's disciplinary concentration. Typically these are taken in the summer after two years of course work.

Economics

要求课程包括：ECON 545，微观经济学；和 ECON 558，计量经济学（可能作为方法和统计学课程或作为学科集中课程，但不包括）。此外，学生还需要在他们计划发展的专业领域中选择两个专业课程。在行为经济学中，可以选择两门课程，例如：MGMT 728，行为经济学基础；和 PSYC 554，行为决策制定 II：判断。在工业组织中：ECON 600，工业组织 I；和 ECON 601，工业组织 II。在劳动经济学中，ECON 630，劳动经济学 I；和 ECON 631，劳动经济学 II。在公共财政中，可以选择两门从：ECON 556，计量经济学和公共政策；ECON 680，公共财政 I；和 ECON 681，公共财政 II。在与学生的顾问协商后，其他课程可能被替代。

在组织理论与管理中，四门课程是必需的，由学生的顾问指导下选择。

在政治与公共政策分析中，四门课程是必需的，由学生的顾问指导下选择。建议的课程包括：PLSC 800，美国政治学；PLSC 801，政治偏好和美国政治行为；和 PLSC 803，美国政治 III：机构。

HPM 学生会在三个领域参加资格考试：(1) 健康政策与管理；(2) 统计学和/or 统计学；和 (3) 学生的学科集中。通常这些课程在完成两年课程后在夏季进行。

特殊要求

在博士学位结束的一年和两年内，顾问将被要求完成学生的研究进展报告，其中包括学生的选择性分析以及其对教学和/or 科研的研究准备。然后会与学生和评审该报告的 DGS 进行讨论。学生若未达到充分进步将被要求与 DGS 会面以解决该问题。

资格考试通常由学生在第二学年结束时参加。在顾问的协助下，一般在资格考试后，每个学生可指定合适的顾问成员加入论文顾问委员会 (DAC)。DAC 将审议并批准由学生提出的论文大纲，并提交给 DGS 和研究生院执行委员会审批。论文大纲必须在第三学年末获得批准。

要进入候选人资格，学生必须：(1) 满足其所在部门的课程要求，如上述所述，至少在两门全学期课程中取得荣誉，并获得平均高通过率；(2) 在资格考试中获得平均高通过率；和 (3) 获得论文大纲批准，由研究生院执行委员会。被录取为候选资格的学士需要在研究生院完成年度博士论文进度报告。

每个 DAC 预计会每学年至少召开两次，必要时会更频繁。学生会安排 DAC 会议。DAC 主席/顾问将提供一个总结性评价，包括计划和所进行的研究。DAC 在决定论文是否可提交给评审者时会参考该总结性评价。该决定是基于论文的公开答辩，涉及正式口头报告向 DAC 和其他邀请的顾问。论文答辩完成后，DAC 主席/顾问将提交论文大纲给 DGS，与三位适当顾问的名字一起。

博士学位论文在公共健康领域必须也需在公开报告会上进行展示。此展示安排在论文提交给评审者之后，并可能在评审报告之前。至少一个
member of the DAC supervising the dissertation and at least one member of the Graduate Studies Executive Committee are required to attend the presentation.

MASTER’S DEGREES

M.Phil. (en route to the Ph.D.) The M.Phil. is awarded to students who have advanced to candidacy. When students advance to candidacy, the registrar’s office automatically submits a petition for the awarding of the M.Phil. degree.

Terminal Master’s Degree Program The School offers a terminal master’s degree program leading to an M.S. in Public Health in three specialty areas: Biostatistics (a two-year program), Health Informatics (a two-year program), and Chronic Disease Epidemiology (a one-year program). All students must fulfill both the departmental and Graduate School requirements for a terminal M.S. degree.

Students must have an overall grade average of High Pass, including a grade of Honors in at least one full-term graduate course (for students enrolled in the one-year program in Chronic Disease Epidemiology) or in at least two full-term graduate courses (for students enrolled in the two-year program in Biostatistics or in Health Informatics). In order to maintain the minimum average of High Pass, each grade of Pass must be balanced by one grade of Honors. For more details, please see Course and Honors Requirements under Policies and Regulations.

A Biostatistics or Chronic Disease Epidemiology student who is withdrawing from the Ph.D. program, and has successfully completed all required course work for the terminal M.S. degree (described below), may apply and be recommended for the M.S. in Public Health. In the other departments, students must have successfully completed (prior to withdrawal) at least ten courses in the doctoral program and a capstone experience, achieving a minimum of two Honors grades and an overall High Pass average. Students who withdraw after qualifying for or receiving the M.Phil. are not eligible for an M.S. degree.

Fields of Study

TERMINAL M.S. IN BIOSTATISTICS

Faculty in the Biostatistics department of the School of Public Health offer a two-year terminal Master of Science degree. Fields include clinical trials, epidemiologic methodology, statistical genetics, and mathematical models for infectious diseases.

Special Admissions Requirements

Applicants should have a strong background in quantitative sciences such as mathematics. In addition, it is recommended that applicants have undergraduate course work in the biological and social sciences. At a minimum, applicants would have taken one year of calculus and a course in linear algebra prior to enrolling in this program. The GRE General Test is required. The TOEFL is required of all applicants whose native language is not English. This requirement is waived only for applicants who, prior to matriculation at Yale, will have received a baccalaureate degree or its foreign equivalent from a college or university where English is the primary language of instruction. If you do not qualify for a waiver but have taken the TOEFL within the past two years, you will need to have your TOEFL scores released to us (code 3987).

Course Requirements

The M.S. in Biostatistics track requires the completion of fifteen required courses (not including EPH 600, BIS 695, and BIS 525). Required courses are: BIS 525, Seminar in Biostatistics and Journal Club; BIS 540, Fundamentals of Clinical Trials; BIS 623, Applied Regression Analysis; BIS 625, Categorical Data Analysis; BIS 628, Longitudinal and Multilevel Data Analysis; BIS 630, Applied Survival Analysis; BIS 678, Statistical Practice I; BIS 679, Advanced Statistical Programming in SAS and R; BIS 681, Statistical Practice II; BIS 695, Summer Internship in Biostatistical Research; EPH 508, Foundations of Epidemiology and Public Health; EPH 600, Research Ethics and Responsibility; S&DS 541, Probability Theory; and S&DS 542, Theory of Statistics. Students entering the program with an M.P.H. may be exempt from EPH 508.

Students must complete two Statistics electives at the 600 level. Students will also be required to attend a Professional Skills Seminar (details provided in the first term).

Additionally students must choose two Biostatistics electives from these courses: BIS 557, Computational Statistics; BIS 567, Bayesian Statistics; BIS 643, Theory of Survival Analysis; BIS 646, Nonparametric Statistical Methods and Their Applications; BIS 651, Spatial Statistics in Public Health; and BIS 691, Theory of Generalized Linear Models. Students demonstrating a mastery of topics covered by the required courses may replace them with more advanced courses but must receive written permission from their adviser and the DGS prior to enrolling in the substitute courses.

Students wishing to complete a thesis may enroll in BIS 650 (1 course unit). This would be an additional requirement and cannot replace any of the required courses noted above. All students who complete a thesis will be required to present their research during a public seminar organized by the Biostatistics department.

TERMINAL M.S. IN HEALTH INFORMATICS

This two-year M.S. provides a well-rounded training in health informatics, with a balance of core courses from such areas as information sciences, clinical informatics, clinical research informatics, consumer health and population health informatics, and data science, and more
broadly health policy, social and behavioral science, biostatistics, and epidemiology. First-year courses survey the field; the typical second-year courses are more technical and put greater emphasis on mastering the skills in health informatics.

### Special Admissions Requirements

Applicants should typically have an undergraduate degree with a focus in health, computer science, and mathematics/statistics. Applicants must submit scores from either the MCAT or the GRE General Test. Students whose native language is not English must take the TOEFL examination. Part-time enrollment is not permitted.

### Course Requirements

The M.S. in Health Informatics consists of a total of fourteen courses (excluding EPH 600, Research Ethics and Responsibility): eight required courses, four electives, and satisfactory completion and presentation of a yearlong capstone project.

Six of the eight required courses are: CB&B 740, Clinical and Translational Informatics; CB&B 750, Core Topics in Biomedical Informatics; EPH 505, Biostatistics in Public Health; EPH 508, Foundations of Epidemiology and Public Health; EPH 608, Frontiers of Public Health; and S&DS 565, Applied Data Mining and Machine Learning. New courses for this program are in development; as they are approved, the DGS will inform students of the two additional required courses. Students who have demonstrated a mastery of topics covered by the required courses may substitute more advanced courses. Students must receive written permission from the DGS and their adviser prior to enrolling in the substitute courses.


In the second year of the program, students are required to complete an independent capstone project under the direction of a faculty member. This project may fall into one of the main areas—clinical informatics; clinical research informatics; population health informatics; and implementation of new methods and technology—and may include elements from several of these areas. Students are required to prepare a carefully written report and make an oral presentation of the work to the faculty and students. A capstone committee consisting of two faculty and one outside reader will provide guidance to the candidate as to the suitability of the project and monitor its progress.

**TERMINAL M.S. IN CHRONIC DISEASE EPIDEMIOLOGY**

Faculty in the Chronic Disease Epidemiology department of the School of Public Health offer a one-year terminal Master of Science degree. This one-year program is designed for medical and health care professionals (e.g., M.D., Ph.D., D.V.M., D.D.S., D.M.D.) who seek the skills necessary to conduct epidemiological research in their professional practice.

### Special Admissions Requirements

Applicants should have a basic understanding of quantitative science and statistics. It is recommended that candidates have strong science backgrounds and demonstrated competency in statistical analysis and logical thinking. Applicants from rigorous programs in the biological or social sciences will be given preference. At a minimum, applicants should have one year of course work in statistics or equivalent prior to enrolling in this program. Applicants must submit scores from either the MCAT or the GRE General Test. Students whose native language is not English must take the TOEFL I or IELTS examination.

### Course Requirements

The M.S. track in Chronic Disease Epidemiology requires the completion of ten courses (excluding the Ethics course, EPH 600; and Seminar, CDE 522), including a capstone course.* Required courses are: BIS 623, Applied Regression Analysis; BIS 625, Categorical Data Analysis; BIS 650, Applied Survival Analysis; EPH 508, Foundations of Epidemiology and Public Health; CDE 516, Principles of Epidemiology II; CDE 525, Seminar in Chronic Disease Epidemiology; CDE 617, Developing a Research Proposal; and EPH 600, Research Ethics and Responsibility.

In addition, students must complete three electives. Suggested electives are: BIS 540, Fundamentals of Clinical Trials; BIS 561, Advanced Topics and Case Studies in Multicenter Clinical Trials; BIS 621, Regression Models; BIS 643, Theory of Survival Analysis; BIS 645, Statistical Methods in Human Genetics; CDE 520, Case-Based Learning for Genetic and Environmental Diseases; CDE 532, Epidemiology of Cancer; CDE 533, Topics in Perinatal Epidemiology; CDE 551, Epidemiology of Heart Disease and Stroke; CDE 545, Health Disparities by Race and Social Class: Application to Chronic Disease Epidemiology; CDE 551, Global Noncommunicable Disease; CDE 562, Nutrition and Chronic Disease; CDE 572, Obesity Prevention and Lifestyle Interventions; CDE 597, Genetic Concepts in Public Health; CDE 600, Directed Readings (one term); CDE 650, Introduction to Evidence-Based Medicine and Health Care; and SBS 531, Health and Aging.
In the capstone course CDE 617, the student is required to develop a grant application that is deemed reasonably competitive by the instructor. An alternative to this capstone course is an individualized tutorial (CDE 600) in which the student completes a manuscript that is suitable for submission for publication in a relevant journal.

M.D./PH.D. PROGRAM REQUIREMENTS FOR PUBLIC HEALTH
All M.D./Ph.D. students must meet with the Director of Graduate Studies (DGS) in Public Health if they are considering affiliating with Public Health. Students in this program are expected to meet the guidelines listed below in the timeframe outlined. The DGS must approve any variations to these requirements.

Teaching
One term of teaching is required. If students teach beyond this requirement, they can be compensated. If a student has served as a teaching fellow elsewhere on campus, this experience may be counted toward the requirement. DGS approval is required to waive the teaching requirement on the basis of previous Yale teaching experience.

Rotations/Internships
Students should do two rotations/internships with potential advisers in Public Health. The purpose of these rotations/internships is to learn lab technique and/or to allow the student time to determine if the PI’s research interests are compatible with the student’s research interests. These rotations/internships are usually done during the summer between the first and second years of medical school coursework. In some cases, students may need to defer this requirement until the summer after the second year after taking certain courses and/or completing readings in order to possess the background necessary for a successful rotation/internship.

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

Timeline for Qualifying Exam
Students generally will take medical school courses in years one and two. Students can take Public Health doctoral courses in years one and two before they affiliate if scheduling allows. Once affiliated with the Public Health program, students will complete all course requirements for the department. This generally takes a minimum of two terms but can take up to four terms after affiliating with Public Health. The qualifying exam is commonly completed after the fourth term of affiliation with the Ph.D. program in Public Health but can sometimes be done earlier with approval of the Ph.D. adviser and DGS.

Prospectus Timeline
Following completion of the qualifying exam, students should focus on the prospectus, which has to be approved by the Public Health Graduate Studies Executive Committee (GSEC) before the end of their sixth term as an affiliated Ph.D. student in Public Health.

Admission to Candidacy
To be admitted to candidacy, students must: (1) satisfactorily complete the course requirements for their department as outlined above, achieve grades of Honors in at least two full-term courses, and achieve an overall High Pass average; (2) obtain an average grade of High Pass on the qualifying exam; and (3) have the dissertation prospectus approved by the Graduate Studies Executive Committee. All Ph.D. students must be admitted to candidacy before the start of their fourth year in the Ph.D. program (i.e., before the start of the seventh term).

Ph.D. or terminal M.S. degree program materials are available upon request to the Office of the Director of Graduate Studies (c/o M. Elliot), School of Public Health, Yale University, PO Box 208034, New Haven CT 06520-8034; 203.785.6383; e-mail, melanie.elliot@yale.edu.

REQUIRED COURSES
For a complete list of Public Health courses, see the School of Public Health bulletin, available online at http://bulletin.yale.edu; and Yale Course Search at https://courses.yale.edu.

All Ph.D. students are required to take the following courses. Students entering the program with an M.P.H. may be exempt from EPH 608.

EPH 600a, Research Ethics and Responsibility  Staff
This course seeks to introduce major concepts in the ethical conduct of research and some of the personal and professional issues that researchers encounter in their work. Sessions are run in a seminar/discussion format. Prerequisite: doctoral student or postdoctoral status only.  0 Course cr
This course is designed for Ph.D. and Advanced Professional M.P.H. students. It explores the major public health achievements in the last century in order to provide students with a conceptual interdisciplinary framework by which effective interventions are developed and implemented. Discussions examine the advances across disciplines of biomedical research, epidemiology and biostatistics, environmental and behavioral sciences, and health policy and management services that led to these major public health achievements. The course examines global and national trends in the burden of disease and underlying determinants of disease, which pose new challenges; and it covers new approaches that are on the forefront of addressing current and future public health needs.