

Areas of Study

EPIDEMIOLOGY

(MPH, MS, PhD)

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I. Epidemiology Programs

INTRODUCTION

Epidemiology is concerned with the study of factors that determine the distribution of health and disease in human populations. The purposes of epidemiological research are to discover the causes of disease, to advance and evaluate methods of disease prevention, and to aid in planning and evaluating the effectiveness of public health programs. Epidemiologists are interested in the study of infectious and noninfectious diseases. In recent years they have turned their attention increasingly toward the study of conditions affected by forces in the social and physical environment.

MISSION

The mission of Epidemiology is to generate new knowledge that can lead to improvements in health, while emphasizing and identifying emerging areas of inquiry, especially those that cross disciplinary boundaries; disseminate and apply existing and new knowledge in the training of health professionals who will engage directly with populations at highest risk of poor health, and/or who will conduct research in epidemiology and biostatistics; and serve the larger communities in which we live and work by using our skills and knowledge. In addition, epidemiologic studies are an essential component of the evaluation of the effectiveness of such programs.

II. Epidemiology 1-Year MPH Requirements

OVERVIEW

The one-year MPH curriculum in epidemiology is an intensive, full-time course of study extending over eleven months (July to May) and requiring enrollment during the summer, fall, and spring. This program is generally limited to students with a prior doctoral degree (e.g., PhD, MD, DDS, DVM, etc.). In addition to completing required schoolwide breath courses in public health, students are required to complete advanced coursework in epidemiologic and biostatistical methods as well as electives in epidemiology, totaling at least 42 units of coursework. A comprehensive oral exam and Masters Paper is required.

Students in this program who wish to extend their academic course work for an additional semester or two may do so with prior consent of the program head, but must be registered, full-time students throughout all semesters in residence. Graduates of the program will be qualified for positions utilizing their epidemiologic and statistical training in federal, state and local health departments as well as for a wide variety of academic research positions and positions in the private medical and health care fields. On completion of the MPH in Epidemiology, some students may be admitted to doctoral studies in Epidemiology or Biostatistics when such admission is compatible with their interests, goals, and prior performance, and is within the admission quota and resources of the program.

COMPETENCIES

Upon satisfactory completion of the MPH curriculum with a concentration in Epidemiology, graduates will be able to demonstrate the following competencies:

- » Identify the principles and limitations of public health screening programs
- » Describe a public health problem in terms of magnitude, person, time, and place

- » Explain the importance of epidemiology for informing scientific, ethical, economic, and political discussion of health issues
- » Comprehend basic ethical and legal principles pertaining to the collection, maintenance, use, and dissemination of epidemiologic data
- » Apply the basic terminology and definitions of epidemiology
- » Calculate basic epidemiology measures
- » Communicate epidemiologic information to lay and professional audiences
- » Draw appropriate inferences from epidemiologic data
- » Evaluate the strengths and limitations of epidemiologic reports

LEARNING OBJECTIVES

Upon satisfactory completion of the one-year MPH program in Epidemiology, graduates will have specific skills in the following areas:

- » Formulating and pursuing research question(s)
- » Design of epidemiological studies
- » Accessing public health data
- » Data management
- » Data analysis
- » Interpreting published epidemiologic studies
- » Mastery of central concepts in epidemiology
- » Population health issues

Specific skills to be mastered in these areas are:

Formulating and pursuing research question(s):

- » Pose an appropriate research question or questions when given a public health or medical problem requiring an epidemiologic investigation
- » Identify demographic, social/behavioral and environmental factors which have an impact on the problem under investigation
- » Write a study protocol detailing the objects and methods for such an investigation

Design of epidemiologic studies

- » Describe the basic study designs used in epidemiological research, i.e. cross-sectional, ecological, case-control, and experimental (field trials) designs and the analytic techniques and limitations of each design.
- » Prepare a study protocol detailing the objects and methods for such an investigation

Accessing Public Health data

- » Identify sources of health data such as demographic reports, vital statistics records, disease registries, and clinic and hospital records and how to access these sources
- » Interpret health status indices based on these data, such as mortality and morbidity rates

Data management

- » Plan, organize and manage procedures for collecting data from existing sources as well as original sources such as household surveys or subjects identified for specific studies
- » Use computer software for data processing preparatory to statistical analysis
- » Evaluate the integrity and comparability of data and identify gaps in data sources
- » With consultation and under supervision, develop data collection and quality control protocols

- » With consultation and under supervision, manage data for a small or medium-scale epidemiologic or clinical study, including preparation of data management plans, data collection protocols, and documentation.

Data analysis

- » Analyze data using appropriate statistical techniques under the guidance of someone with more advanced training
- » Use biostatistical concepts and methods appropriate to epidemiological research
- » Estimate epidemiologic parameters such as the relative risk, and use statistical tests and confidence intervals based on contingency table analyses while
- » Controlling one or two categorical variables
- » Estimate sample size requirements
- » Conduct standard statistical analyses
- » Communicate the results of analyses both orally and in writing
- » Interpret the results in consultation with an experimenter experienced in the problem area

Interpreting published epidemiologic literature

- » Critique epidemiologic literature for strengths and weaknesses of the methodology in published studies
- » Evaluate critically the research questions, methods, analyses, and findings of epidemiological research reports and presentations
- » Write a thesis or equivalent that demonstrates the ability to critique the epidemiologic literature and interpret epidemiologic data

Mastery of central concepts in epidemiology

- » Describe the basic study designs used in epidemiological research, i.e. cross-sectional, ecological, case-control, and experimental (field trials) designs and the analytic techniques applicable to each design
- » Explain prevalence, incidence, rates, relative risk, attributable risk, direct and indirect standardization of rates, standardized mortality ratio, cohort, case-control, precision, bias, confounding, and effect modification.
- » Explain and apply methods of standardization or adjustment for factors such as age or gender in a study population
- » Explain major categories of bias, assess the potential for their occurrence in specific study situations, and propose methods to evaluate and/or reduce their influence on the measures of major interest
- » Evaluate the evidence in favor of and against the likelihood that an association observed in epidemiologic studies is causal
- » Present the purpose and problems of interpretation in surveillance for acute and chronic disease and other factors important for public health

Population health issues

- » Define, assess, and understand the health status of populations, determinants of health and illness, factors contributing to health promotion and disease prevention, and factors influencing the use of health services
- » Contrast the clinical and population perspectives on improving public health
- » Articulate the role of epidemiology in preserving and improving public health
- » Describe the nature of disease distributions in populations and the factors which influence these distributions

CURRICULUM

Each student is expected to work closely with an assigned faculty adviser in the planning of his or her individual schedule of courses. Students in the one-year MPH programs must meet all school-wide breadth requirements, either by passing the appropriate exemption exams or by taking courses that are approved for meeting these requirements.

The one year MPH curriculum in epidemiology is an intensive, full-time course of study extending over eleven months (July to May) and requiring enrollment during the summer, fall, and spring. In addition to completing required school-wide breadth courses in public health, students are required to complete advanced coursework in epidemiologic and biostatistical methods, and electives in epidemiology. Students in the one-year MPH program are expected to take PB HLTH 200J, PB HLTH 200L, PB HLTH 250B and PB HLTH 290 during the fall semester and PB HLTH 200K, PB HLTH 241, and/or Epidemiology electives in the spring semester, all for a letter grade. All students in the one-year MPH program must take the epidemiology seminar PB HLTH 292 in the fall and spring semesters. The seminar is graded on a satisfactory/unsatisfactory basis only.

Students are also required to write a master's paper on an epidemiologic topic previously approved by and under the supervision of the faculty and to present and defend their master's paper during a required oral examination in the spring semester prior to graduation.

IMPORTANT NOTE: Breadth courses MUST BE TAKEN FOR A LETTER GRADE and a student must receive a B- or above to fulfill this requirement. Exceptions to this policy are rare and made on a case-by-case basis.

SAMPLE SCHEDULE

11-month Schedule

Summer Session D		Units
PB HLTH 141	Intro to Biostats	5
PB HLTH 299	Independent Study	3
Fall Semester		Units
PB HLTH 200J	HPM Breadth	2
PB HLTH 200L	HSB Breadth	2
PB HLTH 290	Applied Linear Models	4
PB HLTH 250B	EPI methods II	4
PB HLTH 292	Seminar for 11-mo students	2
	Electives as desired	≥3
Spring Semester		Units
PB HLTH 200K	EHS Breadth	
PB HLTH 241	Anal Categorical Data	4
PB HLTH 292	MPH Seminar	2
PB HLTH 299	Independent Study	3
	Electives as desired	≥6

COMPREHENSIVE EXAM

During the spring semester preceding graduation, students in the one-year MPH program must present and defend an in-depth paper on an epidemiologic topic to be handed in early in the spring semester. The paper can take the form of a critical review of the existing epidemiologic literature about a particular topic; a formal meta-analysis; a paper describing the results of an original epidemiologic study by the student; or a detailed research proposal for an epidemiologic study. In the fall semester before the paper is due, each student will be assigned to a faculty member with expertise in the subject matter of the student's proposed paper. The student will work with and receive ongoing input from that faculty member during the various stages of planning and writing the paper. (Details concerning the paper topic, format, due dates for various stages of development of the paper can be found in the Epidemiology Masters Paper Guidelines.) Updated and detailed guidelines will be provided in the MPH Fall seminar.

In the spring semester, each student will give a brief oral presentation concerning his or her paper on a pre-assigned date and will then be questioned by two or more faculty. Specifically, in this oral comprehensive examination, the student will be expected to defend his or her written paper and, in the process, demonstrate competence in and a firm grasp of epidemiologic and biostatistical methods and approaches relevant to studies of disease causation and prevention. Decisions on the outcome of the comprehensive examination will be given to the student the day of the examination as satisfactory or unsatisfactory. In the event of an unsatisfactory outcome, a written and/or oral re-examination is the usual recommended course of action. Students who do not pass the re-examination are not eligible to receive the Masters degree.

III. Epidemiology MS Requirements

OVERVIEW

Students in the M.S. program have as a minimum a bachelor's degree and a strong background in biological, social, or mathematical science that will provide a basis for the application of epidemiological methods and principles to the study of diseases. The M.S. program differs from the MPH program in that students emphasize depth of course work in one or more basic science areas complementary to epidemiologic research and are not required to take the breadth courses in public health. The M.S. program usually takes two years and requires at least 24 credits in courses in epidemiology and biostatistics, and a minimum of three months of epidemiological research. A comprehensive oral exam and Masters Paper is required.

COMPETENCIES

Upon satisfactory completion of the MS curriculum with a concentration in Epidemiology, graduates will be able to demonstrate the following competencies.

- » Describe the nature of disease distributions in populations and the factors that influence these distributions
- » Explain and discuss the strengths and weaknesses of the key study designs used in epidemiological research, i.e., cross-sectional, ecological, case-control, cohort, and experimental (field trials) designs, and the analytic approaches and techniques applicable to each design
- » Analyze and address a given epidemiologic question, select the most appropriate study design and develop a detailed study proposal
- » Utilize biostatistical concepts and methods appropriate to epidemiological research

- » Prepare, manage, and analyze epidemiologic data sets using appropriate computer hardware and software packages and applications
- » Critically evaluate the research questions, methods, analyses, and findings of epidemiological research reports and presentations

LEARNING OBJECTIVES

- » Demonstrate an in depth knowledge and understanding of theoretical concepts and practical applications of epidemiology and biostatistics, as well as the principles underlying the ethical conduct of human research.
- » Demonstrate competence in epidemiologic research design and methods by preparing, managing, and analyzing epidemiologic datasets.
- » Communicate and present epidemiologic research findings in their area of expertise to peers and fellow students in a lucid, understandable manner.
- » Demonstrate competence in a third area of public health or science appropriate to their research in addition to epidemiology and biostatistics (e.g. anthropology, virology, sociology, health policy, demography, etc.)

CURRICULUM

Unit Requirements. Two-year MS students are required to complete a minimum of 48 total units of coursework over four academic semesters and one summer. The minimum unit enrollment per academic semester is 12 units. Students in the two-year MPH program must meet all school-wide breadth requirements.

Grading. Students have the option of taking a course on a Satisfactory/Unsatisfactory (S/U) basis, but no more than one-third of the master's program may be fulfilled by courses graded Satisfactory. Students cannot take MPH breadth course requirements on an S/U basis. No more than 12 units may be in the 296, 297, 298, 299 series.

Courses. You can enroll in classes through the online system: calcentral.berkeley.edu. Please check the online schedule at schedule.berkeley.edu each semester for new courses and for course availability. Courses in the PB HLTH 290, 292, 298, and 299 series may change their section numbers each semester. Course Numbers (previously CCNs) will also change every semester. Additionally courses numbered 99 and below are considered to be undergraduate courses. Graduate students may take no more than half of the required degree units in courses numbered 100 through 199. Courses numbered below 99 do not count toward meeting any graduate degree requirements.

Please be aware that full-time student status requires an enrollment in a minimum of 12 units each semester. Also note that most of the courses listed are only offered in either the FALL or SPRING semester.

SAMPLE SCHEDULE

MS students in epidemiology are under Graduate Division Plan II, which requires a minimum of 48 units and an oral comprehensive examination. The MS degree requires two years of academic residence to meet minimum requirements. Students admitted to the MS program are generally limited to those considered highly likely to seek admission to doctoral studies in epidemiology upon completion of their MS degree.

Students in the MS program generally follow a curriculum similar to that of students in the two-year MPH program in epidemiology/biostatistics, but do not have to meet the school-wide breadth requirements, although they are strongly encouraged to take courses in various public health disciplines outside epidemiology and biostatistics.

First Year

Fall Semester		Units
PB HLTH 142	Introductory Biostatistics	4
or PB HLTH 145	or Statistical Analysis of Continuous Outcome Data	4
PB HLTH 250A	Epi Methods I	3
or PB HLTH 250B	or Epi Methods II	4
PB HLTH 292	Seminar	2
	Elective	2-3
Spring Semester		Units
PB HLTH 241	Analysis of Categorical Data	4
PB HLTH	Electives	8-10

Second Year

Fall Semester		Units
PB HLTH 245	Multivariate Statistics	4
or PB HLTH C242C	Longitudinal Data Analysis	4
PB HLTH 250B	Epi Methods II	4
PB HLTH 251C	Meta-Analysis in Epi	2
or PB HLTH 292	or Capstone I Seminar	2
	Electives	≥ 2
Spring Semester		Units
PB HLTH C242C	Longitudinal Data Analysis	4
PB HLTH 292	Capstone II Seminar	2
PB HLTH	Electives	≥ 6

All students in this program are required to take PB HLTH 292, Epidemiology Seminar, in the fall semester of their first year. Students who do not have experience reviewing the epidemiologic literature and writing about epidemiologic topics are strongly encouraged to take PB HLTH 251C, Causal Inference and Meta-Analysis in Epidemiology, in the fall semester. Students interested in a greater depth of understanding of epidemiologic methods and theoretical underpinnings are encouraged to take PB HLTH 250C, Epidemiologic Theory. Students are also encouraged to take courses in a third area related to their research interests (e.g. virology, demography, anthropology, sociology, etc.).

COMPREHENSIVE EXAM

During the spring semester preceding graduation, students in the two-year MPH program must present and defend an in-depth paper on an epidemiologic topic to be handed in early in the spring semester. Specific guidelines will be provided in the Capstone I seminar. In the

fall semester before the paper is due, each student will be assigned to a faculty member with expertise in the subject matter of the student's proposed paper. The student will work with and receive ongoing input from that faculty member during the various stages of planning and writing the paper. (Details concerning the paper topic, format, due dates for various stages of development of the paper can be found in the Epidemiology Masters Paper Guidelines.)

In the spring semester, each student will give a brief oral presentation concerning his or her paper on a pre-assigned date and will then be questioned by two or more faculty. Specifically, in this oral comprehensive examination, the student will be expected to defend his or her written paper and, in the process, demonstrate competence in and a firm grasp of epidemiologic and biostatistical methods and approaches relevant to studies of disease causation and prevention. Decisions on the outcome of the comprehensive examination will be given to the student the day of the examination as satisfactory or unsatisfactory. In the event of an unsatisfactory outcome, a written and/or oral re-examination is the usual recommended course of action. Students who do not pass the re-examination are not eligible to receive the Masters degree.

IV. Epidemiology PhD Requirements

OVERVIEW

The PhD program is administered by the Group in Epidemiology, which is appointed by the Graduate Division and includes faculty members from a number of other disciplines and departments at Berkeley, as well as faculty from the UC San Francisco campus. In addition to the courses required for the master's degree, PhD students identify a third area of scientific knowledge in which they will develop competence. Normally, a minimum of one additional year of study is required following receipt of the master's degree before taking the qualifying examination and being advanced to candidacy for the PhD degree. After advancement to candidacy, students must conceive, conduct, and complete an original research project culminating in a dissertation. The normative time in the PhD program is four years.

In order to be admitted to candidacy, the student must submit a prospectus and pass a three-hour oral qualifying examination which is conducted by a four-member faculty committee. The four-member committee must be approved by the Graduate Division. After being admitted to candidacy, a three-member Dissertation Committee (approved by the Graduate Division) monitors the progress of the student. The Dissertation Committee is responsible for guiding and supervising the student's research and for assuring that the thesis meets the highest standards of excellence.

COMPETENCIES

Upon satisfactory completion of the PhD curriculum with a concentration in Epidemiology, graduates will be able to demonstrate the following competencies:

- » Independently identify study questions that will advance scientific knowledge about a topic of public health significance
- » Use appropriate statistical methods, including multivariate models to analyze data from epidemiologic studies using cross-sectional, case-control, or cohort designs
- » Critically review scientific manuscripts and research proposals
- » Independently design and implement studies addressing epidemiologic problems

- » Develop a research proposal that states a study question, presents a scientific and public health rationale for its significance and specifies a detailed methodology for carrying out an epidemiologic study to answer the question
- » Design study management, data collection, and data management protocols
- » Communicate the results orally and in writing in such a way that non-epidemiologically trained practitioners or the general public can understand their applicability
- » Present oral and written reports on such studies which satisfy the criteria for sound science

LEARNING OBJECTIVES

PhD degree recipients in epidemiology are preparing to assume academic and/or public health careers in research and teaching. Students should be able to do the following upon completion of the PhD degree in epidemiology:

- » Demonstrate a high degree of mastery of epidemiologic research design and methods by successfully designing and carrying out original research to discover new knowledge in epidemiology and the biological or social sciences related to human health or making advances in methodologic theory or applications.
- » Demonstrate an in depth knowledge and understanding of theoretical concepts and practical applications of epidemiology and biostatistics, as well as the principles underlying the ethical conduct of human research.
- » Communicate and present epidemiologic research findings in their area of expertise to peers and fellow students in a lucid, understandable manner.
- » Demonstrate competence in a third area of public health or science appropriate to their research in addition to epidemiology and biostatistics (e.g. anthropology, virology, sociology, health policy, demography, etc.)

CURRICULUM

The amount of coursework necessary for each doctoral student in the PhD program will vary depending on the student's previous educational experience and background. However, the Graduate Group requires competence in the material covered by the following courses.

NOTE: Graduate Division requires that no more than one-third of units in an individual's total curriculum while at UC Berkeley be taken as Satisfactory/Unsatisfactory. Any PB HLTH 299 series units are not counted in this calculation.

Required Courses during Years 1 and 2

PB HLTH 250B (Fall) Epidemiologic Methods II (Letter-grade)

PB HLTH 250C (Spring) Advanced Epidemiologic Methods (Letter-grade)

PB HLTH 293 (Fall & Spring) Epidemiology Doctoral Seminar

Enroll for the appropriate section (noted on the course offerings at epi.berkeley.edu)

Required every-semester for years 1 & 2, and strongly recommended through the remaining years in the program

PB HLTH 241 (Spring) Statistical Analysis of Categorical Data (Letter-grade)

PB HLTH 252D (Causal Inference I) and PB HLTH 252E (Causal Inference II)

At least one semester of causal is required. Exceptions may be made, but on a case-by-case basis

PB HLTH 290 Grant Writing Seminar

Recommended Courses

PB HLTH 207A	(Fall) Public Health Aspects of Maternal/Child Nutrition (Letter-grade)
PB HLTH 235	(Fall) Impact Evaluation for Health Professionals (Letter-grade)
PB HLTH 245	(Fall) Introduction to Multivariate Statistics (Letter-grade)
PB HLTH C242C	(Spring) Longitudinal Data Analysis (Letter-grade)
PB HLTH 252C	(Fall) Intervention Trial Design (S/U)
PB HLTH 252D	(Spring) Causal Inference I (Letter-grade)
PB HLTH 252E	(Fall) Causal Inference II (Letter-grade)
PB HLTH 255A	(Spring) Social Epidemiology (Letter-grade)
PB HLTH 255D	(Spring) Methods in Social Epidemiology (S/U)
PB HLTH 256A	(Spring) Human Genome, Environment and Health (Letter-grade)
PB HLTH 256B	(Spring) Genetic Analysis Methods (Letter-grade)
PB HLTH 257	(Fall, Spring) Outbreak Investigation (S/U)
PB HLTH 258	(Spring, odd years) Cancer Epidemiology (Letter-grade)

Students must take online training in human subject research and obtain prior human subjects approval for planned dissertation research.

In addition, students are expected to develop expertise in a “third” area, which is a content or methods area not included in the above required content. The selection of an area is at the discretion of the student but should be discussed with the student’s adviser as soon as possible, since content in the “third” area is part of the qualification examination for advancement to candidacy.

Designated Emphasis

A “Designated Emphasis” is defined as an area of study constituting a new method of inquiry or an important field of application relevant to two or more existing doctoral degree programs. It is not a free-standing degree program, but must be added as an additional major along with an existing doctoral degree program. Students electing to add a Designated Emphasis are required to complete the academic work in the Designated Emphasis in addition to all the requirements of the doctoral program. There are no adjustments made to the normative time of the student’s major when a student undertakes a Designated Emphasis.

To qualify for the Designated Emphasis, students must have on the Qualifying Examination committee a representative of the DE and must be examined in that area of study. Students are consequently required to be admitted to the DE before taking the Qualifying Examination.

As an Epidemiology student you might be interested in learning more about Computational Biology and Bioinformatics as part of your doctoral curriculum. If so, students should pursue a Designated Emphasis in Computational Biology (“DE”) as part of your PhD experience at UC Berkeley. Please see DE requirements at ccb.berkeley.edu. Contact Kate Chase for more information at katechase@berkeley.edu.

Teaching

Every doctoral student in epidemiology is expected to serve for at least one semester as a Graduate Student Instructor (GSI) before taking the qualifying examination. Teaching fortifies theoretical knowledge gained in coursework, prepares students for academic careers, and provides service to the Division and the School of Public Health. GSIs are required to complete a 300-level semester-long teaching pedagogy seminar before or during their first teaching

appointment at Berkeley. The Graduate Division also mandates that first time GSIs take the online course on GSI Professional Standards and Ethics Course and attend a Teaching Conference. For more information, please see gsi.berkeley.edu/

Ethics Training

Knowledge of how to conduct ethical research is essential. In addition to a required course in research ethics in epidemiology, all doctoral students must complete the UC Berkeley Online Human Subjects Training prior to taking the qualifying examination (see below).

Annual Review of Progress

To ensure that students advance in a timely manner, an annual review form will be completed by the PhD student and his/her faculty adviser (can be found on page 19: Links to Important Graduate Division Forms). This form will be included in the student's permanent academic file.

RESIDENCY REQUIREMENTS

Epidemiology doctoral students must register and enroll in at least 12 units per semester for a minimum of four semesters of academic residence at Berkeley.

Information regarding residency for tuition purposes can be found at registrar.berkeley.edu/Residency/legalinfo.html. Questions regarding residency should be directed to the Residence Affairs Unit at ores@berkeley.edu or 510-642-5990.

QUALIFYING EXAMINATION

Prior to writing the dissertation, each PhD student in epidemiology must pass a Qualifying Examination, which is required by the Graduate Division of all doctoral students at the University of California, Berkeley. The qualifying process requires the following steps:

1. Preparation of a written prospectus for the dissertation work
2. An Oral Qualifying Examination on the breadth and depth of knowledge in epidemiology, biostatistics, and a "third area"
3. Discussion and approval of the prospectus with the dissertation committee

In most cases, the Qualifying Exam should be complete in the fourth or fifth semester of study.

Prospectus

Each student must prepare a written prospectus, the structure and content of which are provided to students. The prospectus must take the form of a detailed proposal, described elsewhere, for an epidemiologic study. In most instances, the prospectus should be directly related to the student's proposed dissertation research. The prospectus should be written for an audience with general knowledge of epidemiologic and biostatistical principles and methods, but knowledge that is highly specific to the proposed study, particularly knowledge relating to clinical, laboratory, environmental, genetic, or social/behavioral variables, scales, etc. should not be assumed. In preparing their prospectus, students are permitted to use any written materials that are available in the public domain as resources and to consult with their adviser or with other faculty members and fellow students. However, students may not have assistance in the actual writing of their prospectus, which must be entirely the original work of the student (This requirement does not preclude the student from receiving and making improvements in response to feedback from his/her adviser on a preliminary draft of the prospectus.). After the

final version of the prospectus is submitted to the faculty adviser, the adviser must certify that he/she has read the prospectus; that he/she finds the prospectus of acceptable quality; and that to the best of his/her knowledge, the prospectus represents the original work of the student. Through his/her prospectus, the student is expected to demonstrate convincingly that he/she possesses the following skills which are defined in a document provided to all students who are preparing for the QE: 1) conceptual; 2) problem solving; 3) critical/creative; 4) writing. Once the prospectus has been certified by the adviser, the student may proceed to schedule and take the Oral Qualifying Examination. Once the Oral Qualifying Examination has been scheduled, it is advisable to also schedule the Discussion of the Prospectus. The details on the format and content of the prospectus are available from the Epidemiology Student Affairs Officer.

Oral Qualifying Examination

For most epidemiology PhD students, the Qualifying Examination should take place after three or four semesters of coursework, although some students may require either less or more preparation, depending on their level of preparation at the time of entering the PhD program. It is the shared responsibility of the student and his/her faculty adviser to assure that the student is taking appropriate coursework in epidemiology, biostatistics, and the student's chosen "third area" and that the student is adequately prepared to take the Qualifying Examination.

The purpose of the Qualifying Examination is to assess the adequacy of a student's preparation to conduct dissertation research in epidemiology. All epidemiology PhD students will be examined and be required to demonstrate competence in epidemiology, biostatistics, and a "third area" of the student's choosing. The "third area" is typically chosen so as to be relevant to the student's proposed dissertation research. The Qualifying Examination is intended to assess the breadth and depth of the student's knowledge with regard to the history, theory, concepts, and "real world" application of epidemiology, biostatistics, and the specified "third area." The Qualifying Examination is not a defense of the prospectus.

Once the student's adviser has certified that the student's prospectus is of acceptable quality, and that the student is otherwise adequately prepared to take the Qualifying Examination, the student must prepare and submit a formal application for the Qualifying Examination to Graduate Division. This application must be approved by the Head of the Graduate Group in Epidemiology and must be submitted to the Epidemiology Student Affairs Officer. Only the Student Affairs Officer can submit the application to the Graduate Division.

The Graduate Division requires that this application be submitted a minimum of three weeks prior to the proposed date of the Qualifying Examination.

To be eligible to take the Qualifying Examination, the Graduate Division requires that the student:

1. Be registered for the semester in which the exam is taken or, if taken during the winter or summer break, be registered in either the preceding or the following semester.
2. Have completed at least one semester of academic residence.
3. Have at least a B average in all work undertaken in graduate standing.
4. Have no more than two courses graded "Incomplete".

Students may not take the exam before being notified that admission to the exam has been approved in writing by the Graduate Division.

Included in the information on the application for the Qualifying Examination are the three areas in which the student is to be examined (epidemiology, biostatistics, and a “third area” the student selects) and the four faculty who will comprise the Qualifying Examination Committee. The composition of the QE Committee must meet the requirements of and be approved in writing by the Graduate Division. The student’s faculty adviser (who is presumed to be the chair of the student’s dissertation committee) cannot serve on the student’s Qualifying Examination Committee. One member on all QE and Dissertation Committees must be chosen from outside the student’s degree granting program. This Academic Senate Representative is important for ensuring that the committee is conducted in a fair and professional manner. The Academic Senate Representative must be a member of the Berkeley Academic Senate. A student’s Qualifying Examination Committee will consist of four faculty members as follows:

1. Chair: The Chair of the Qualifying Examination Committee must be either a ladder rank faculty (i.e. a member of the UC Berkeley Academic Senate) member of the Epidemiology Graduate Group or an adjunct faculty member of the Epidemiology Graduate Group who has been approved in writing by the Dean of the Graduate Division to serve as the chair of a Qualifying Examination Committee.
2. Member: A ladder rank faculty member (i.e. a member of the UC Berkeley Academic Senate) of the Epidemiology Graduate Group or an adjunct faculty member of the Epidemiology Graduate Group who has been approved in writing by the Dean of the Graduate Division to serve as a member of a Qualifying Examination Committee.
3. 2nd Member: A second ladder rank faculty member (i.e. a member of the UC Berkeley Academic Senate) of the Epidemiology Graduate Group or an adjunct faculty member of the Epidemiology Graduate Group who has been approved in writing by the Dean of the Graduate Division to serve as a member of a Qualifying Examination Committee. This member must also be a faculty member in the Division of Biostatistics.
4. Academic Senate Representative: A ladder rank faculty member of the UC Berkeley Academic Senate who is *not* a core member of the Epidemiology Graduate Group.

Affiliated members who are Academic Senate faculty may serve as Academic Senate Representatives for students in that graduate group, and by exception, as Chair, Co-Chair, or Additional Member. Affiliated members who are not Academic Senate faculty may serve by exception as Co-Chair or Additional Member. There are no restrictions on an affiliated member serving as a Chair, Additional Member, and/or Academic Senate Representative simultaneously for different students in the same graduate group.

A link to the list of Epidemiology Graduate Group members can be found on page 19: Links to Important Graduate Division Forms, including information concerning which adjunct faculty members have standing permission to chair and/or serve on Qualifying Examination Committees. The chair and the second epidemiology faculty member of each Student’s Qualifying Examination Committee will be selected by the Head of the Graduate Group (or his designee) from among the eligible faculty by a process intended to assure that appropriate expertise is represented on each committee and that all eligible faculty participate in examinations periodically. The biostatistics faculty member and the “Academic Senate Representative” for each QE Committee will be selected in consultation with the respective student, taking into account the student’s prior coursework; his/her chosen “third area;” and the willingness and availability of suitable faculty to serve.

Conduct and Content of the Qualifying Examination

Materials are provided to students that explain the structure of the examination and a listing of areas of theory, practice and subject matter that are the domain for the examination. These materials will be made available to students upon request by the Epidemiology Student Affairs Officer.

A student who fails or partially fails the Qualifying Examination, as well as his/her faculty adviser, will be informed about the area(s) of deficiency that led to the failure. A student may re-take the Qualifying Examination once, it must be scheduled at least 90 days after the first exam was held; any student who fails the Qualifying Examination a second time may not advance to candidacy or remain in the doctoral program.

Discussion of Prospectus

Once the student has passed the Oral Qualifying Examination, the student must establish a dissertation committee through the Graduate Division and then have a discussion of the prospectus with all members of the committee. This discussion needs to occur within 90 days after the Oral Qualifying Examination. The prospectus will be distributed to the dissertation committee at least three weeks before the scheduled date of the discussion of the prospectus. Committee members will have read the prospectus before the discussion. The committee members will discuss the research plan for the dissertation with the student, resolve any differences of opinion on approach amongst the committee members and the student, and decide on any changes to the research plan that are necessary. The discussion will be scheduled for a 2 hour period. The committee can decide whether to request an opportunity to review the prospectus again after the changes have been implemented by the student. Once the committee agrees that the prospectus is acceptable, the student can commence work on the dissertation. It is recommended that the full committee meet annually with the student to discuss the progress of the student and the dissertation work.

ADVANCEMENT TO CANDIDACY

To be advanced to candidacy, doctoral students must:

1. Pass the Oral Qualifying Examination;
2. Have no more than two courses graded incomplete;
3. Have a minimum 3.0 grade-point average in all upper division and graduate courses taken in graduate standing.

Dissertation committees must be chaired by a UC Berkeley Academic Senate member. The dissertation committee for the PhD consists of three faculty members, one of whom must be from outside the Group in Epidemiology and a UC Berkeley Academic Senate member.

Doctoral students are expected to meet with all members of the dissertation committee at least annually to review progress toward completion of the dissertation research. Students are encouraged strongly to have a schedule of regular meetings with the dissertation chair.

Once a student has passed the Oral Qualifying Examination, the student submits an "Application for Advancement to Candidacy" form (can be found on page 19: Links to Important Graduate Division Forms) and a copy of the student's CITI certification (see below) to the Division's Student Affairs Officer, Janene Martinez (Room 113 Haviland Hall). The application form must be signed by

the chair of the dissertation committee and accompanied by a check for \$90 made payable to the UC Regents. Please note: The proposed members of the dissertation committee must be listed on this application form.

Human Subjects Training and Approvals

Doctoral students are responsible for obtaining any necessary approvals or exemptions from the UC Berkeley Committee for the Protection of Human Subjects for carrying out their dissertation research BEFORE they begin data collection or analysis of an extant data set, even if the study has received institutional review board approval elsewhere and/or previously collected data are being used.

All students who plan to engage in human subjects research must first complete and pass the appropriate Collaborative IRB Training Initiative (CITI) web-based education program modules. They can then be *certified* to serve as a “lead investigator” or as “key personnel” on any UC Berkeley human subjects research project.

No protocol submitted to CPHS with a student listed on the application coversheet or added as an amendment will be approved, re-approved, or determined to be exempt without documentation of the student having completed and passed all CITI course modules and quizzes as required and as appropriate to the type of research (biomedical or social-behavioral) to be conducted. Completing the training and passing the quiz modules associated with the CITI program will certify a UC Berkeley-affiliated individual as trained in human subjects research. This training will also fulfill NIH human subjects training requirements, and for individuals who qualify for Principal Investigator (PI) status, will certify eligibility to serve as the PI or key personnel on a human subjects research project funded by NIH. NIH-funded investigators are encouraged to complete the appropriate CITI training modules even if they have documentation of training elsewhere or through other programs. Certification from the initial CITI training program is valid for three years. Recertification through the CITI continuing education program is required every three years thereafter. The passing score for the Core Course Modules or the Continuing Education Course is 80%. The CITI program can be found at citiprogram.org/default.asp. Students are also encouraged to take the NIH course on human subjects research, which can be found at phrp.nihtraining.com/users/login.php.

After a student has completed and passed the appropriate modules for his/her research project, a message is automatically sent directly to the UC Berkeley Office for the Protection of Human Subjects (OPHS). Once the student finishes the course, a link will appear in his/her Learner’s Menu (main menu) called “Completion Report.” *The student should print out and maintain a copy of the Completion Report.* All students must submit a copy of their certification at the time of protocol submission to CPHS, and must attach a copy to their “Advancement to Candidacy” form. Any questions about human subjects training and approvals should be directed to the Office for the Protection of Human Subjects (OPHS), Power Building at 2150 Shattuck Avenue, Suite 313. Email: cphs@berkeley.edu.

Advancement to Candidacy Award

Students who have submitted their advancement to candidacy documents are eligible to receive a one-time stipend from the School of Public Health Grossman Fund of \$2,500.

Doctoral Candidacy

Candidacy for the PhD degree is of limited duration. When a student is advanced to candidacy, the Graduate Division informs him or her of the number of semesters he or she is eligible to be a candidate, based on time in candidacy, or “Normative Time.” Students who do not complete the PhD within that time, plus a two-year grace period, will have their candidacy lapsed by the Graduate Division.

Lapsing of Candidacy

Lapsing of candidacy is a probationary status, usually lasting two years, for students who have not completed the final requirements for their degree at an adequate rate. Usually, a student’s candidacy is lapsed by the Graduate Division two years after he or she exceeds the Normative Time in candidacy for the discipline, unless the department requests and the Graduate Division grants an extension. Departments can recommend that a student’s candidacy be lapsed earlier if the student is given a written warning six months before lapsing is to take effect. A student whose candidacy has been lapsed may not hold any academic appointment on campus, including that of Graduate Student Instructor or Graduate Student Researcher.

PLEASE NOTE: The Graduate Division usually will not accept Oral Qualifying Examinations more than five years old as representing current knowledge, unless the student provides other evidence of continuing scholarly activity besides research for the dissertation. This policy is based on the Graduate Council’s belief that the Oral Qualifying Examination and submission of the dissertation are not separate “hurdles,” but together form an integrated educational experience for the PhD candidate.

DISSERTATION

General but very helpful information on writing and filing the dissertation can be found on the Graduate Division site, [Dissertation Writing and Filing](#), and [Graduate Division Writing Workshops](#).

The Dissertation Writer’s Room

An additional resource for students working on dissertations is the Dissertation Writer’s Room, a space dedicated to doctoral students advanced to candidacy, opened in Room 215 of the Doe Library on June 21, 2010. The room provides a dedicated space encouraging focus and concentration on your writing in the quiet company of fellow doctoral candidates from humanities and social science disciplines.

Located in Room 215 of the Doe Library, at the rear of Graduate Services (208 Doe), the Dissertation Writer’s Room hours are Monday through Thursday, 9 am to 9 p.m.; Friday, 9 a.m. to 5 p.m.; and Sunday, 1 to 9 p.m. You must sign up beforehand and show your UC Berkeley ID card when you enter 208 Doe, as the Doe Library’s Graduate Services is reserved for the exclusive use of UC Berkeley graduate students, faculty, and staff. The Dissertation Writer’s Room accommodates six students using the study tables and two using the reading chairs. As utilization increases, this will be expanded. Wireless Internet connections are available via AirBears2.

Doe’s Graduate Services section is a study space for all graduate students, housing around 25,000 volumes and a reserve library for graduate courses in the humanities and social sciences. The core collection comprises standard editions of core texts, works of major theorists, titles on master’s exams reading lists, and other materials heavily used by graduate

students in the humanities and social sciences. Graduate Services also houses the Modern Authors Collection (XMAC), comprising the works of major 20th century English, American, and Anglophone literary authors, and a small collection of English and foreign language dictionaries.

In addition to the study spaces in Graduate Services, study carrels in the Gardner (main) Stacks can be reserved by graduate students. Graduate students may apply at the Doe Circulation Desk for these carrels, and books from the Gardner Stacks may be charged out and kept in the carrels.

Presentation of Dissertation Research

Doctoral students are expected to present their research plans and progress/results periodically in the epidemiology doctoral seminar PB HLTH 293. While the Graduate Division does not require a public thesis defense, all doctoral students are expected to present the findings of their dissertation research in a scheduled seminar during the semester. Two venues are available: PB HLTH 293 and the Epidemiology Research Seminar Series.

Annual Review of Doctoral Students

The Graduate Council requires that all doctoral students who have advanced to candidacy meet annually with at least two members of their dissertation committee. This annual review is part of the Graduate Council's efforts to improve the doctoral completion rate and to shorten the time it takes to obtain a doctoral degree.

Withdrawal

Students who choose not to register for a given semester *must* formally withdraw in order to remain in good standing. Withdrawing from the University must be approved by the graduate adviser chair and the Graduate Division. Students are entitled to *two* semesters of formal withdrawal which do not count in the accrued time to degree.

How to Withdraw from the University

There are two forms that need to be submitted (to the Division's Student Affairs Officer, Janene Martinez in 113 Haviland Hall) to withdraw from the University and then to be re-admitted.

1. "Notice of Withdrawal" petition
2. "Application for Readmission"
3. "Legal Residence Petition"

Filing the Dissertation

Doctoral degrees are awarded in December and May. Academic senate regulations state that in order to receive a degree in any given term, all work for the degree must be completed by the last day of the term. *This is a firm deadline.* 