Environmental Health Sciences

Academic degree programs in the Graduate Group in Environmental Health Sciences (EHS) are recommended for individuals with clear research interests of an interdisciplinary nature. Applicants may apply to the MS, MPH program or the PhD program. EHS is administered within the Division of Environmental Health of the School of Public Health. Although students receive their academic degrees from the graduate group (under the jurisdiction of the Graduate Division of the UC Berkeley campus), students are also affiliated with and apply to the School of Public Health. For more information on the EHS and Global Health and Environment (GHE) MPH please go here (https://guide.berkeley.edu/graduate/degree-programs/public-health/).

For a complete list of faculty please visit our website (https://publichealth.berkeley.edu/academics/environmental-health-sciences/).

Undergraduate Program

There is no undergraduate program in Environmental Health Sciences.

Admission to the University

Applying for Graduate Admission

Thank you for considering UC Berkeley for graduate study! UC Berkeley offers more than 120 graduate programs representing the breadth and depth of interdisciplinary scholarship. The Graduate Division hosts a complete list (https://grad.berkeley.edu/admissions/choosing-your-program/list/) of graduate academic programs, departments, degrees offered, and application deadlines can be found on the Graduate Division website.

Prospective students must submit an online application to be considered for admission, in addition to any supplemental materials specific to the program for which they are applying. The online application and steps to take to apply can be found on the Graduate Division website (https://grad.berkeley.edu/admissions/steps-to-apply/).

Admission Requirements

The minimum graduate admission requirements are:

1. A bachelor's degree or recognized equivalent from an accredited institution;
2. A satisfactory scholastic average, usually a minimum grade-point average (GPA) of 3.0 (B) on a 4.0 scale; and
3. Enough undergraduate training to do graduate work in your chosen field.

For a list of requirements to complete your graduate application, please see the Graduate Division's Admissions Requirements page (https://grad.berkeley.edu/admissions/steps-to-apply/requirements/). It is also important to check with the program or department of interest, as they may have additional requirements specific to their program of study and degree. Department contact information can be found here (https://guide.berkeley.edu/graduate/degree-programs/).

Where to apply?

Visit the Berkeley Graduate Division application page (http://grad.berkeley.edu/admissions/apply/).

Admission to the Program

MS in Environmental Health Sciences

Candidates with undergraduate coursework in calculus, chemistry, and biology are preferred. Common undergraduate majors for admitted applicants: engineering, environmental science, biology, chemistry, other biological, natural, or physical sciences fields, population sciences, and biomedical fields. Common work experience for admitted applicants: Work experience is not required for admission, but successful applicants in past years have worked as lab technicians, student researchers, research scientists, environmental consultants, post-graduate fellows, toxicologists, occupational hygienists, or engineers, as well as for the Peace Corps.

A writing sample is also required. There is no length requirement for the writing sample, but a sample approximately 10 pages in length is typical. The writing sample may be a final paper from a class, a popular media article, a report, a blog entry, an undergraduate thesis, etc. The purpose of the writing sample is to demonstrate your preparation for graduate-level coursework and research at Berkeley by sharing an example of your prior work that exhibits your ability to articulate and support complex ideas, solve technical problems, construct and evaluate arguments, and/or sustain a focused and coherent discussion. The writing sample should be your own work; if there were multiple authors, please describe your specific contributions to the writing and project.

Submissions of GRE scores are optional but recommended for this program, especially if you have no other evidence of quantitative, verbal, or analytical abilities in your application.

In addition to the UC Berkeley application, students must also submit an additional application (https://publichealth.berkeley.edu/admissions/) to the School of Public Health.

MS in Global Health and Environment

Candidates with undergraduate coursework in calculus, chemistry, and biology are preferred. Common undergraduate majors for admitted applicants: engineering, microbiology, environmental science, biology, chemistry, other biological, natural or physical sciences fields, population sciences and biomedical fields. Common work experience for admitted applicants: work experience is not required for admission, but successful applicants in past years have worked as lab technicians, student researchers, research scientists, environmental organizers and advocates, program managers, engineers, post-graduate fellows, in global health programs and for the Peace Corps.

Submissions of GRE scores are optional but recommended for this program, especially if you have no other evidence of quantitative, verbal, or analytical abilities in your application.

In addition to the UC Berkeley application, students must also submit an additional application (https://publichealth.berkeley.edu/admissions/) to the School of Public Health.

PhD in Environmental Health Sciences

For the doctorate degree, applicants should hold an MS or MPH in a related field, as well as display a clear research orientation and firm knowledge of research techniques.

A writing sample (approximately 10 pages is typical) that highlights your writing, research, and analytical skills, is required. The writing sample may be a published paper, a draft research paper (e.g., a preprint), a final paper from a class, a report, a Masters thesis, an undergraduate thesis, etc. Preferred writing samples demonstrate your ability to articulate and support complex ideas, solve technical problems, estimate key parameters from observations, construct and evaluate arguments, and/or sustain a focused and coherent discussion. If there were multiple authors, please describe your specific contributions to the writing and project, either as an added page to the document or upload a note to the "other" documents section.

Submissions of GRE scores are optional but recommended for this program, especially if you have no other evidence of quantitative, verbal, or analytical abilities in your application.

The School of Public Health has specific admissions instructions and criteria that are separate from that of the larger campus (above). Please visit the School of Public Health website (https://publichealth.berkeley.edu/admissions/graduate/application-instructions/) for a full list of instructions and deadlines.

Normative Time Requirements

Normative Time to Advancement: 4 Semesters

The normal time from entry into the doctoral program to advancement to candidacy is four semesters although it is generally somewhat less for students who complete a master's degree in Environmental Health Sciences (EHS) at Berkeley.

Total Normative Time: 10 Semesters

Time to Advancement

Curriculum

Although there are no formal course requirements for the doctoral degree, students are expected to be well-versed in the material covered in the following courses at the time of the qualifying examination. The only exceptions are: 1) PB HLTH 293 Doctoral Seminar once a year and 2) if the doctoral degree candidate does not have an MPH, they are required to take PB HLTH 200 Foundations of Public Health Practice .

PB HLTH 270B	Toxicology I	3
PB HLTH 241	Intermediate Biostatistics for Public Health	4
PB HLTH 220C	Health Risk Assessment	3
PB HLTH 250B	Epidemiologic Methods II [1]	4
PB HLTH 270	Introduction to Environmental Health Sciences	3
PB HLTH 270A	Exposure Assessment and Control	3
PB HLTH 271E	Science and Policy for Environment and Health	3
PB HLTH 200	Foundations of Public Health Practice	1
PB HLTH 293	Doctoral Seminar	1-4
PB HLTH 299	Independent Research	1-12

[1] For the Biostatistics and Epidemiology requirements, any 200 level courses will satisfy the requirements

[2] Students who already have an MPH are exempt from this requirement.

Graduate Group Exam and Prospectus

There is a two part examination sequence for students in the EHS PhD program: the preliminary Graduate Group Exam and the Qualifying Exam. The preliminary examination (Graduate Group Exam) must be successfully completed prior to the Qualifying Examination. The Graduate Group Exam requires a written research prospectus, but the exam itself is oral and covers the breadth of EHS fields. It is expected that students will take the EHS Preliminary Graduate Group Examination after 3 or 4 semesters of course work.

Qualifying Examination

Once a student's faculty adviser has certified that the student is adequately prepared to take the oral Qualifying Examination, the student must submit an eform for the qualifying examination via CalCentral. The Qualifying Exam is designed to evaluate the student's potential to do research and is focused on the written research prospectus. The Graduate Division requires that this application be submitted a minimum of three weeks prior to the proposed date of the Qualifying Examination.

CITI Protocol Course Certifications

Doctoral students are responsible for obtaining any necessary approvals or exemptions from the UCB 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 UCB human subjects research project.

Time in Candidacy

Advancement

Once a student has passed the oral qualifying examination, the student submits an Application for Advancement to Candidacy eform and a copy of the student's CITI certification via CalCentral. The application form must be signed by the chair of the dissertation committee and accompanied by a check made payable to the UC Regents. You can see fee's listed here (https://registrar.berkeley.edu/tuition-fees-residency/tuition-fees/). Candidacy is good for 6 semesters/3 years. 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.

Dissertation

PhD students in EHS fall under the guidelines of Plan B of the Berkeley Graduate Division which stipulate that a committee of at least three Berkeley Academic Senate members will guide the research and judge the merits of the dissertation. The faculty advisor is either the chair or co-chair of the Dissertation Committee, and the Committee consists of at least three, but no more than four members. Dissertation committees must be chaired (or co-chaired) by 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. Once a dissertation committee is approved, the student is strongly encouraged to organize a full committee meeting once per semester to present progress, identify any obstacles, provide funding plans, and an updated timeline for completion.

Dissertation Exit Talk

PhD students are expected to host a 1-hour Exit Talk after their dissertation has been approved and submitted. This Exit Talk is a public celebration of the student's dissertation research and open to

the student's advisors, friends, family, and the general EHS community. The talk is approximately 45 minutes, with 15 min for questions from the general audience. This talk is NOT a formal dissertation defense, and students will not be questioned by their dissertation committee.

Required Professional Development

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 on-line course on GSI Professional Standards and Ethics Course and attend a teaching conference. For more information, please see the GSI website (http://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.

Academic Residence Requirement

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

Curriculum

Environmental Health Sciences MS - Required Courses

PB HLTH 270	Introduction to Environmental Health Sciences	3
PB HLTH 270A	Exposure Assessment and Control	3
PB HLTH 270B	Toxicology I	3
PB HLTH 220C	Health Risk Assessment (prerequisite: PB HLTH 270B)	3
PB HLTH 250A	Epidemiologic Methods I (* Students who have already taken an introductory course in epidemiology may substitute 250B, Epidemiology Methods II)	4
PB HLTH 142	Introduction to Probability and Statistics in Biology and Public Health	4
PB HLTH 200	Foundations of Public Health Practice	1

Biostatistics - ONE IS REQUIRED

PB HLTH 241	Intermediate Biostatistics for Public Health	4
PB HLTH 245	Introduction to Multivariate Statistics	4

Other courses can be substituted with approval.

Environmental Health Sciences - Thesis Units

PB HLTH 299	Independent Research (2nd year at minimum)	3-6 units, with thesis advisor permission, to be enrolled in during the last year

ELECTIVE COURSES

Remaining units are to be chosen from upper division or graduate courses from courses in a range of closely related fields. A recommended list will be provided to students.

- No internship/fieldwork/practicum but fieldwork common
- Master's Project (Plan II)

environmental health sciences

Required		
PB HLTH 270	Introduction to Environmental Health Sciences	3
PB HLTH 200	Foundations of Public Health Practice	1
PB HLTH 270A	Exposure Assessment and Control	3
Choose two of the following:		
CIV ENG 110	Water Systems of the Future	3
PB HLTH 273	Environmental Determinants of Infectious Disease	3
PB HLTH 270B	Toxicology I	3
PB HLTH W272A	Course Not Available	3
PB HLTH W272C	Course Not Available	3
PB HLTH 290	Health Issues Seminars (Exposure Assessment & Control II [even years])	3
PB HLTH 220C	Health Risk Assessment (prerequisite: PB HLTH 270B)	3
PB HLTH 271G	Health Implications of Climate Change	3

biostatistics and epidemiology

At least three courses are required, including both of the following:		
PB HLTH 142	Introduction to Probability and Statistics in Biology and Public Health	4
PB HLTH 250A	Epidemiologic Methods I (Students who have already taken an introductory course in epidemiology may substitute PB HLTH 250B: Epidemiology Methods II)	3
Select one of the following:		
PB HLTH 241	Intermediate Biostatistics for Public Health	4
PB HLTH 245	Introduction to Multivariate Statistics	4
PB HLTH 250B	Epidemiologic Methods II	4
PB HLTH 254	Occupational and Environmental Epidemiology	3

Global Health and Environment THESIS UNITS:

PB HLTH 299	Independent Research (3-6 units, with thesis advisor permission, to be enrolled in during the last year)	3-6

elective courses

Remaining units are to be chosen from upper division or graduate courses in areas and from courses in a range of closely related fields. A recommended list will be provided to students.

- No internship/fieldwork/practicum but fieldwork common
- Master's Project (Plan II)