

DOCTORAL PROGRAMS IN OCCUPATIONAL HEALTH

Doctoral education at The Education and Research Center (ERC) is provided in several concentrations relevant to Occupational Safety and Health. The Doctor of Science degree in Environmental Health with concentrations or areas of interest in Occupational Health, Occupational Epidemiology, Occupational Hygiene, Injury Epidemiology, Occupational and Environmental Molecular Epidemiology and Environmental Genetics are offered. The doctoral programs are structured to give students exposure to key components of research: study design, field experience, relevant laboratory experience, and statistical analysis.

The Candidates may be admitted to a doctoral program in more than one discipline if the program meets the requirements of both departments. Usually, three to four years following the master's program are necessary to complete requirements for the award of doctoral degree.

Following are the curricula for the pre-doctoral and post-MD doctoral programs. Students admitted will either be recent college graduates in biology, natural science or mathematics, or will be students with a Master's degree in one of these disciplines. Persons accepted must have an outstanding record in science courses and a high quantitative GRE score. Preference will be given to students with a prior Master's degree who have had experience in fields relevant to epidemiology and occupational health. Usually, these students will enroll directly in the doctoral program.

Students without a prior Master's degree will spend most of their first two years in formal courses in epidemiology, biostatistics, occupational health, occupational hygiene and exposure assessment, physiology and toxicology. In their third or fourth semester at the Harvard Chan School, pre-doctoral students identify a thesis topic and work on that until completion of the doctoral degree. The total time in training at the School is four to five years.

The following is a list of didactic courses that will be required for pre-doctoral students. Exceptions to these requirements will be made only if suitable prior training (e.g., MD degree, Master's degree) or alternate courses exist. A description of each course is provided in the school course catalogue. Ordinarily, a 2.5 -credit course has 32 class-hours per semester and a 5.0-credit has 64 class-hours per semester.

PhD in Population Health Sciences Program-Wide Required Courses and Credits

In addition to the doctoral curriculum listed on the next page, all PhD students are expected to complete the following requirements:

Course Number	Title	Course Credits (GSAS)
PHS 2000 A F ₁ F ₂	Quantitative Research Methods in Population Health Sciences	4.0
PHS 2000 B S ₁ S ₂	Quantitative Research Methods in Population Health Sciences	4.0
SBS 506 F ₁	An Intro to History, Politics, & Public Health: Theories of Disease Distribution & Health Inequities	2.0

Pre-Program Requirement

All students should have prior coursework in biostatistics equivalent to at least BST 201 (Introduction to Biostatistics) at the entry into the program. Admitted students will be required to take an online biostatistics pre-test to assess competency with the BIO201 material. Students who score below a certain threshold will be required to either (i) take an online biostatistics module during the summer preceding program entry or (ii) register for an in-person summer biostatistics course at the school. Students who do particularly poorly on the pretest will be strongly encouraged to pursue the in-class option.

Regardless of the pre-test outcome, the PHS Program will encourage students to attend a biostatistics "bootcamp" in late August during program orientation to ensure all students are adequately prepared for the required quantitative research methods sequence.

PHS Wednesday Evening Seminar

1st Year– Wednesdays, 5:30pm-7:30pm

This 'standing' evening seminar is required for all PHS students and takes place one night per week throughout the first year, covering various rotating topics/components.

Topic Rotations (Four per month, rotate by week):

- Week One: PHS 'Pulse' Check Dinner with Faculty Director S.V. 'Subu' Subramanian (begins in Fall One)
- Week Two: Scientific Communication & Grant-Writing (begins in Fall Two, continues through Year Two)
- Week Three: PHS Speaker Series (begins in Fall One; optional in Year Two)
- Week Four: Pedagogy & Teaching (begins in Spring One, continues through Year Two)

Please note: In order to alleviate the various potential 'stressors' associated with the timing and coordination of a weekly evening class, the PHS team will order-in dinner and beverages each week for all students and participants.

DOCTORAL DEGREE PROGRAM CONCENTRATIONS:

- Environmental and Occupational Epidemiology
- Occupational Epidemiology
- Environmental Molecular Epidemiology
- Environmental/Occupational Molecular Epidemiology
- Occupational and Environmental Medicine
- Environmental Epidemiology
- Injury Epidemiology
- Ergonomics & Safety
- Occupational Hygiene

Key

R: Required courses,

E: Elective courses students choose 10 or 15 credits

R10: ordinarily student's take 10 credits from these recommended courses.

Courses listed as "F1 and F2" meet in the fall, and "S1 and S2" courses meet in the spring, W is winter session.

Please Note: Training Grant funding may require additional courses, please check with your Training Grant Director.

Additional courses other than those listed may be chosen in close collaboration with the faculty advisor.

Course Number	Title	Course Credits	Environmental and Occupational Epidemiology	Occupational Epidemiology	Environmental Molecular Epidemiology	Environmental/Occupational Molecular Epidemiology	Occupational and Environmental Medicine	Environmental Epidemiology (T32)	Injury Epidemiology	Ergonomics & Safety	Occupational Hygiene
BST 201 F ₁ F ₂	Introduction to Statistical Methods	5.0			R		R	R	R	R	R
BST 210 S ₁ S ₂	Applied Regression Analysis *Student's may take BST210 or BST213	5.0			R*		R*	R*	E	E	E
BST 213 F ₁ F ₂	Applied Regression for Clinical Research *Student's may take BST210 or BST213	5.0			R*		R*	E15		E	
EH 205 F ₁ F ₂	Human Physiology	5.0			R		R	R	R	R	R
EH 231 S ₁ S ₂	Occupational Health Policy and Administration	2.5			R		R		R	R	R
EH 236 S ₁ S ₂	Epidemiology of Environmental & Occupational Health Regulation	5.0			R		R	R	R	R	R
EH 262 F ₁ F ₂	Introduction to the Work Environment	2.5			R		R	E15	R	R	R
EH 269 S ₁ S ₂	Exposure Assessment for Environmental & Occupational Epidemiology	2.5			R		R	R	R	R	
EPI 201 F ₁	Introduction to Epidemiology: Methods I	2.5			R		R	R	R	R	R
EPI 202 F ₂	Epidemiologic Methods 2: Elements of Epidemiologic Research	2.5			R		R	R	R	R	R
EPI 204 S ₂	Analysis of Case-Control and Cohort Studies	2.5			R		R	R10		E	E
EH 504 F ₁ F ₂	Principles of Toxicology	5.0			R		R	R	R	R	R
ID 215 S ₁ S ₂	Environ and Occupational Epidemiology	2.5			R		R	R	R	R	R
ID 263 S ₁ S ₂	Practice of Occupational Health	5.0			R		R	E15	R	R	R
HPM 548 F ₁ or S ₁	Responsible Conduct of Research (course can be taken for credit or audited)	1.25			R		R	R	R	R	R
BST 222 F ₁ F ₂	Basics of Statistical Inference	5.0			E10		E10	E15		E	
BST 226 S ₁ S ₂	Applied Longitudinal Analysis	5.0			E10		E10	E15		E	
EH 201 F ₂	Introduction to Environmental Health	2.5			E10		E10	R10			
EH 202 S ₁	Principles of Environmental Health	2.5			E10		E10	R10			
EH 241 S ₁ S ₂	Occupational Safety and Injury Prevention	2.5			E10		E10		R	R	E
EH 243 F ₁ F ₂	Ergonomics/ Human Factors	2.5			E10		E10		R	R	E

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EH 282 S ₁ S ₂	Injury Epidemiology and Prevention**	2.5			E10		E10		R	R	E
EH 510 F ₁ F ₂	Fundamentals of Human Environmental Exposure Assessment	2.5			E10		E10		E	R	R
EH 263 F ₁ F ₂	Analytical Methods and Exposure Assessment	5.0			E10		E10	E15	E	R	E
EH 292 S ₁ S ₂	Properties and Behavior of Airborne Particles	2.5			E10		E10	E15		E	R
EH 520 S ₁ S ₂	Research Design in Environmental Health	2.5			E10		E10	R❖	E	E	R
EPI 203 S ₂	Design of Cohort and Case-Control Studies	2.5			E10		E10	R	E	E	
EPI 240 S ₂	Biomarkers in Epidemiologic Research	1.25			E10		E10				
EPI 249 F ₁	Molecular Biology for Epidemiologists	2.5			E10		E10				
ID 271 S ₁ S ₂	Advanced Regression for Environmental Epi	1.25			E10		E10	E15			E
EPI 294 S ₂	Screening	2.5			E10		E10				
RDS 500 S ₂	Risk Assessment	2.5			E10		E10	E15			R
EH 523 W	Work, Productivity and Health	2.5			R10		R10		E	E	E
BST212 S ₁ S ₂	Survey Research Methods in Community Health	2.5			R10		R10	R10	E	E	
BST232 S ₁ S ₂	Methods I	5.0			R10		R10				
BST 233 S ₁ S ₂	Methods II	5.0			R10		R10	R10			
EH 208 S ₁ S ₂	Pathophysiology of Human Disease**	5.0			R10		R10	R			
EH 232 S ₁ S ₂	Introduction to Occupational and Environmental Medicine	2.5			R10		R	R10			
EH 278 S ₂	Human Health and Global Environmental Change	2.5			R10		R10	R10			
EPI 213 S ₁	Epidemiology of Cancer	2.5			R10		R10				
EH 521 F ₂	Environmental Cardiology	2.5			R10		R10	R10			
EPI 247 F ₂	Epidemiologic Methods Development	2.5			R10		R10	R10	E	E	
EPI 269 F ₂	Epidemiologic Research in Obstetrics and Gynecology	2.5			R10		R10	R10			
EPI 293 W	Analysis of Genetic Association Studies	2.5			R10		R10				
EPI 507 F ₂	Genetic Epidemiology	2.5			R10		R10	R			
ID 269 F ₂	Respiratory Epidemiology	1.25			R10		R10	R10			
EH 298 S ₂	Environmental Epigenetics	2.5			R10		R10	R10			
EPI 289 S ₁ S ₂	Models for Causal Inference	2.5						R			
EPI 205 F ₁ F ₂	Practice of Epidemiology	2.5						R★			
EH 516 W	Environmental Genetics**	2.5						E15			
BST 223 S ₁ S ₂	Applied Survival Analysis	5						E15			
EH 279 F ₁ F ₂	Radiation Environment: Its Identification, Evaluation & Control	2.5						E15	E	E	R
ID 214 S ₁ S ₂	Nutritional Epidemiology	2.5						E15			
EPI 254 S ₂	The Epidemiology of Aging	1.25						R10			
EPI 284 S ₁	Epidemiology of Neurologic Diseases	2.5						R10			
EPI 207 F ₁	Advanced Epidemiologic Methods	2.5						R10			
EPI 223 F ₂	Cardiovascular Epidemiology I	2.5						R10			
ID 240 S ₁	Principles of Injury Control	2.5							R	R	
EH 260 S ₁ S ₂	Workplace Environmental Controls for Established and Emerging Technologies	5.0			R10		R10		R	R	R
EH 261 S ₁ S ₂	Occupational Health and Safety Management Practices for New and Emerging Technologies	2.5			R10		R10				R

❖ Required for EH students

★ Required for EPI students

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EH 296 S ₁ S ₂	Occupational Biomechanics**	5.0							F	F	
BE 110	Biomedical Engineering: Physiological Systems Analysis (Course at Harvard FAS)	5.0							F	F	
MIT 16.453J	Human Systems Engineering	5.0							F	F	
MIT 2.184	Biomechanics and Neural Control of Movement	5.0							F	F	
EH 252 S ₁ S ₂	The Impact of Buildings on Health, Productivity and Sustainability	5.0							F	F	F
EH 257 S ₁ S ₂	Water Pollution	5.0									F
EH 297 S ₁ S ₂	Atmospheric Environmental Seminars	5.0									F
EH 522 F ₁ F ₂	Indoor Environmental Quality and Health	5.0									F

** Offered alternate years, check catalog

The SD Student Timetable

PROGRESS	PROGRESS DUE
Submission of <i>Prospective Program Form</i>	End of 2nd Semester, but no later than the end of the 3rd semester with permission*
Submission of <i>Final Program Form</i> Submission of <i>Nomination of Oral Qualifying Examination Committee Form</i>	End of 5th Semester*
Submission of <i>Oral Qualifying Examination Scheduling Form</i>	End of 6th Semester*
Submission of <i>Nominations for Research Committee Form</i>	One month after successful completion of Oral Examination
Submission of <i>Progress Report Form</i>	Six months after passing Oral Examination. Must be submitted at least twice a year thereafter until dissertation defense.
Submission of <i>Application for Degree Form</i>	Before degree granting period in which dissertation is defended
Dissertation Defense	End of 5th year for full-time students End of 7th year for part-time students

* Double the time for part-time students.

Full-time students have five academic years from date of entry into the program to complete required course work, and to defend and to submit the dissertation. Any deviation from the five-year limit must be approved by the CAD prior to the second semester in the fifth year. Part-time students have seven academic years from date of entry to complete degree requirements, and any deviation from this limit must be approved by the CAD prior to the second semester in the seventh year.