ENVIRONMENTAL SCIENCE/ PUBLIC HEALTH (BS/MPH)

Earn a dual bachelor's and master's degree in five years

The environment is a powerful determinant of public health. Combining your environmental studies through Loyola's School of Environmental Sustainability (SES) (https://www.luc.edu/sustainability/) with a master's degree in public health will strengthen your ability to improve public health.

CURRICULUM

Code	Title	Hours
BS Requirements		
Core Curriculum		
ENVS 137	Foundations of Environmental Science I	3
BIOL 101	General Biology I	3
BIOL 111	General Biology I Lab	1
CHEM 160	Chemical Structure and Properties	3
CHEM 161	Chemical Structure and Properties Laboratory	1
BIOL 102	General Biology II	3
BIOL 112	General Biology II Lab	1
CHEM 180	Chemical Reactivity I	3
CHEM 181	Chemical Reactivity I Lab	1
ENVS 200	Environmental Careers and Professional Skills	1
ENVS 203	Environmental Statistics	3
ENVS 274	Chemistry of the Environment	3
ENVS 275	Chemistry of the Environment Lab	1
ENVS 280	Principles of Ecology	3
ENVS 286S	Principles of Ecology Lab	1
PLSC 392	Environmental Politics	3
Justice and Ethics Choice		
Select one of the following:		3
ENVS 284	Environmental Justice	
PHIL 287	Environmental Ethics	
THEO 204	Religious Ethics and the Ecological Crisis	
Economics Choice		
ENVS 335	Ecological Economics	3
or ECON 328	Environmental Economics	
Engaged Learning Choice		
Select one of the following:		3
ENVS 226	Science & Conservation of Freshwater Ecosystems	
ENVS 267	Bird Conservation and Ecology	
ENVS 273	Energy and The Environment	
ENVS 283	Environmental Sustainability	
ENVS 340	Natural History of Belize	
ENVS 345	Conservation and Sustainability of Neotropical Ecosystems	
ENVS 350A	Solutions to Environmental Problems: Water	
ENVS 350B	Solutions to Environmental Problems: Biogas	
ENVS 350C	Solutions to Environmental Problems: Climate Action	
ENVS 350F	Solutions to Environmental Problems: Food Systems	
ENVS 369	Field Ornithology	
ENVS 391	Environmental Research	
ENVS 395	Environmental Internship	
Capstone Choice		
Select one of the following:		3
ENVS 390	Integrative Seminar	
ENVS 391C	Independent Environmental Research (Capstone)	
ENVS 395C	Environmental Internship (Capstone)	
Electives [1]		*21*
See designated elective categories below		
MPH Requirements		
MPBH 400	Determinants of Population Health	3
MPBH 402	Public Health Practice and Management	3
MPBH 403	Introduction to Epidemiology	3
MPBH 404	Biostatistics for Health and Biological Science	3
or MPBH 409	Biostatistics I	
MPBH 407	Public Health Policy: Concepts and Practice	3
MPBH 499	Public Health in Action	3
MPH Track-Specific Curricula		*15*
MPH Electives [1,2]		*6*
Select two of the following:		
MPBH 413	The Epidemiology of Obesity: An Energy Balance Perspective	
MPBH 426	Infectious Disease Epidemiology	
MPBH 432	Health Impact Assessment	
MPBH 495	Special Topics	
Applied Practice Experience		*1*
MPBH 410	MPH Practicum	
Integrated Learning Experience		*2*
MPBH 411	MPH Capstone	
Total Hours		**109**

1 Students could take ENVS 301 and/or ENVS 380 to satisfy MPH elective requirements.

2 Selected courses from other schools/programs may satisfy MPH elective requirements.

BS Electives

Code	Title	Hours
Society, Ethics, and Justice		
Select one of the following:		3
ENVS 204	Gender, Health & Environment	
ENVS 260 / COMM 260	Environmental Journalism	
ENVS 279 / HIST 279E	Climate and History	
ENVS 284	Environmental Justice	
ENVS 297 / HIST 297E	North American Environmental History	
ENVS 298	Special Topics (with SES approval)	

ENVS 338	Climate Change and Human Health
ENVS 350A	Solutions to Environmental Problems: Water
ENVS 350B	Solutions to Environmental Problems: Biogas
ENVS 350C	Solutions to Environmental Problems: Climate Action
ENVS 350F	Solutions to Environmental Problems: Food Systems
ENVS 383	Human Dimensions of Conservation
ENVS 391	Environmental Research (with SES approval)
ENVS 395	Environmental Internship (with SES approval)
ENVS 398	Special Topics (with SES approval)
ENVS 399	Directed Readings (with SES approval)
COMM 101	Public Speaking & Critical Thinking
COMM 277	Organizational Communication
COMM 306	Environmental Advocacy
COMM 322	Guerilla Media
COMM 379	Digital Sustainability
ENGL 288	Nature in Literature
PHIL 287	Environmental Ethics
PSYC 277	Environmental Psychology
SOCL 226	Science, Technology, & Society
SOCL 252	Global Inequalities
SOCL 272	Environmental Sociology
SOCL 276	The Sociology and Politics of Food
SOCL 278	Global Health
THEO 204	Religious Ethics and the Ecological Crisis
THEO 344	Theology and Ecology
Policy, Economics, and Resource Management	
Select one of the following:	3
ENVS 298	Special Topics (with SES approval)
ENVS 300	Introduction to Public Health
ENVS 310	Introduction to Environmental Law & Policy
ENVS 311	Natural Resources and Land Use Law & Policy
ENVS 312	Water Law & Policy
ENVS 313	Energy Law & Policy
ENVS 327	Food Systems Analysis
ENVS 332	Industrial Ecology
ENVS 333	Introduction to the Circular Economy
ENVS 335	Ecological Economics
ENVS 336	Design for Circular & Sustainable Business
ENVS 338	Climate Change and Human Health
ENVS 363	Sustainable Business Management
ENVS 364	Sustainability Management in the Global Context
ENVS 383	Human Dimensions of Conservation
ENVS 384	Conservation Economics
ENVS 389	Ecological Risk Assessment
ENVS 391	Environmental Research (with SES approval)
ENVS 395	Environmental Internship (with SES approval)
ENVS 398	Special Topics (with SES approval)
ENVS 399	Directed Readings (with SES approval)
ECON 328	Environmental Economics
GLST 305	Globalization and Environmental Sustainability
MGMT 201	Managing People and Organizations
PLSC 354	Global Environmental Politics
Environmental Science Electives	
Select five, at least three of which must be at the 300 level:	15
ENVS 204	Gender, Health & Environment
ENVS 207	Plants and Civilization
ENVS 215 / BIOL 215	Ornithology
ENVS 218	Biodiversity & Biogeography
ENVS 223	Soil Ecology
ENVS 224	Climate & Climate Change
ENVS 226	Science & Conservation of Freshwater Ecosystems
ENVS 267	Bird Conservation and Ecology
ENVS 273	Energy and The Environment
ENVS 278	Hydrology
ENVS 283	Environmental Sustainability
ENVS 298	Special Topics (with SES approval)
ENVS 300	Introduction to Public Health
ENVS 301	Environmental Health
ENVS 303	Introduction to Epidemiology
ENVS 319	Winter Ecology
ENVS 320	Conservation Biology
ENVS 322	Invasive Species
ENVS 323	Environmental Microbiology
ENVS 325	Sustainable Agriculture
ENVS 326	Agroecosystems
ENVS 327	Food Systems Analysis
ENVS 330	Restoration Ecology
ENVS 338	Climate Change and Human Health
ENVS 340	Natural History of Belize
ENVS 345	Conservation and Sustainability of Neotropical Ecosystems
ENVS 350A	Solutions to Environmental Problems: Water
ENVS 350B	Solutions to Environmental Problems: Biogas
ENVS 350C	Solutions to Environmental Problems: Climate Action
ENVS 350F	Solutions to Environmental Problems: Food Systems
ENVS 369	Field Ornithology
ENVS 380	Introduction to Geographic Information Systems
ENVS 381	Advanced GIS Applications
ENVS 382	Remote Sensing
ENVS 383	Human Dimensions of Conservation
ENVS 385	Introduction to Global Health
ENVS 387	Principles of Ecotoxicology
ENVS 388	Applied Environmental Statistics
ENVS 389	Ecological Risk Assessment
ENVS 391	Environmental Research (with SES approval)
ENVS 395	Environmental Internship (with SES approval)
ENVS 398	Special Topics (with SES approval)
ENVS 399	Directed Readings (with SES approval)
ANTH 104	The Human Ecological Footprint
ANTH 303	People and Conservation

BIOL, CHEM, PHYS 300-level courses (with SES approval)	
Total Hours	**21**

MPH Track-Specific Curricula

Epidemiology

This hybrid program combines online and evening classes. Epidemiology is the basic science of public health: it helps us understand the causes of and solutions to diseases. This track equips students to design, conduct, analyze, and interpret population health research, while they learn the basic principles of all public health disciplines.

Code	Title	Hours
MPBH 412	Intro to Statistical Computing for Public Health	2
MPBH 421	Biostatistics II	3
MPBH 423	Intermediate Epidemiology	3
MPBH 427	Introduction to Correlated Data Analysis	1
MPBH 431	Grant Writing	3
Choose One Research Methods Course from the following:		3
MPBH 413	The Epidemiology of Obesity: An Energy Balance Perspective	
MPBH 414	Introduction to Global Health	
MPBH 433	Clinical Trials	
MPBH 434	Systematic Review and Meta-Analysis	
Total Hours		**15**

Global Health Equity

This concentration is a hybrid program of online and evening classes. Study the health of global populations with the ultimate goal of identifying and eliminating structures and practices of inequity and injustice to advance health equity for individuals and populations.

Code	Title	Hours
MPBH 414	Introduction to Global Health	3
MPBH 417	Global Maternal & Child Health	3
MPBH 422	Population Health Planning & Management	3
MPBH 431	Grant Writing	3
Choose one of the following: [1]		3
BEHL 407	Social Determinants of Health and Bioethics	
BEHL 432	Global Bioethics	
Total Hours		**15**

[1] Students may choose an elective course not on this list with Track Director approval.

Public Health Policy and Management

This concentration can be completed entirely online, and also can be taken with in-person courses. This curriculum studies the organization, structure, and delivery of health-related services, and associated population health outcomes. Students may customize their academic focus in either public health policy, administration, or both.

Code	Title	Hours
MPBH 416	Health Services Research Methods	3
MPBH 425	Policy Analysis	3
Choose one of the following:		3
BEHL 402	Justice & Health Care	
BEHL 404	Biomedical Ethics and Law	
BEHL 407	Social Determinants of Health and Bioethics	
BEHL 411	Systems Ethics Frameworks	
BEHL 412	Organizational Ethics I: Business, Professionalism, and Justice	
BEHL 418	Advancing Health Equity Practice	
BEHL 432	Global Bioethics	
Choose two of the following:		6
Policy-oriented		
MPBH 420	Public Health Law: Theories and Cases	
MPBH 424	Health Economics and Healthcare Financing	
Management-oriented		
MPBH 422	Population Health Planning & Management	
CMAN 533	Fiscal Management in Health Care Organizations	
Total Hours		**15**

Suggested Sequence of Courses

The below sequence of courses is meant to be used as a suggested path for completing coursework. An individual student's completion of requirements depends on course offerings in a given term as well as the start term for a major or graduate study. Students should consult their advisor for assistance with course selection.

Course	Title	Hours
Year One		
Fall		
BIOL 101	General Biology I	3
BIOL 111	General Biology I Lab	1
CHEM 160	Chemical Structure and Properties	3
CHEM 161	Chemical Structure and Properties Laboratory	1
ENVS 137	Foundations of Environmental Science I	3
	Hours	**11**
Spring		
BIOL 102	General Biology II	3
BIOL 112	General Biology II Lab	1
CHEM 180	Chemical Reactivity I	3
CHEM 181	Chemical Reactivity I Lab	1
ENVS 200	Environmental Careers and Professional Skills	1
ENVS 203	Environmental Statistics	3
	Hours	**12**
Year Two		
Fall		
ENVS 280	Principles of Ecology	3
ENVS 286S	Principles of Ecology Lab	1
Environmental Science Elective		3
	Hours	**7**
Spring		
Environmental Science Electives		3
Society, Ethics, & Justice Elective		3
	Hours	**6**
Year Three		
Fall		
ENVS 274	Chemistry of the Environment	3

ENVS 275	Chemistry of the Environment Lab	1
300 Level Environmental Science Elective		3
300 Level Environmental Science Elective		3
	Hours	**10**
Spring		
ENVS 335 or ECON 328	Ecological Economics or Environmental Economics	3
PLSC 392	Environmental Politics	3
Policy, Economics, & Resource Management Elective		
300 Level Environmental Science Elective		3
	Hours	**9**
Year Four		
Fall		
Engaged Learning Choice		3
MPBH 400	Determinants of Population Health	3
MPBH 402	Public Health Practice and Management	3
MPBH 403	Introduction to Epidemiology	3
MPBH 431	Grant Writing	3
	Hours	**15**
Spring		
Capstone Choice		3
MPBH 407	Public Health Policy: Concepts and Practice	3
MPBH 404	Biostatistics for Health and Biological Science	3
MPBH 499	Public Health in Action	3
	Hours	**12**
Year Five		
Fall		
MPBH 412	Intro to Statistical Computing for Public Health	2
MPBH 421	Biostatistics II	3
MPBH 423	Intermediate Epidemiology	3
Research Methods Choice		3
MPH Electives		3
MPBH 434	Systematic Review and Meta-Analysis	3
	Hours	**17**
Spring		
MPBH 410	MPH Practicum	1-3
MPBH 411	MPH Capstone	1-3
MPBH 423	Intermediate Epidemiology	3
MPBH 427	Introduction to Correlated Data Analysis	1
MPH Electives		3
	Hours	**10**
	Total Hours	**109**

Guidelines for Accelerated Bachelor's/ Master's Programs

Terms

- Accelerated Bachelor's/Master's programs: In this type of program, students share limited credits between their undergraduate and graduate degrees to facilitate completion of both degrees.
- Shared credits: Graduate level credit hours taken during the undergraduate program and then applied towards graduate program requirements will be referred to as shared credits.

Admission Requirements

Accelerated Bachelor's/Master's programs are designed to enhance opportunities for advanced training for Loyola's undergraduates. Admission to these programs must be competitive and will depend upon a positive review of credentials by the program's admissions committee. Accordingly, the admission requirements for these programs may be higher than those required if the master's degree were pursued entirely after the receipt of a bachelor's degree. That is, programs may choose to have more stringent admissions requirements in addition to those minimal requirements below.

Requirements:

- Declared appropriate undergraduate major,
- By the time students begin taking graduate courses as an undergraduate, the student has completed approximately 90 credit hours, or the credit hours required in a program that is accredited by a specialty organization,[1]
- A minimum cumulative GPA for coursework at Loyola that is at or above the program-specific requirements, a minimum major GPA that is at or above the program-specific requirements, and/or appropriate designated coursework for evaluation of student readiness in their discipline.[2]

Students not eligible for the Accelerated Bachelor's/Master's program (e.g., students who have not declared the appropriate undergraduate major) may apply to the master's program through the regular admissions process. Students enrolled in an Accelerated Bachelor's/Master's program who choose not to continue to the master's degree program upon completion of the bachelor's degree will face no consequences.[3]

Ideally, a student will apply for admission (or confirm interest in proceeding towards the graduate degree in opt-out programs) as they approach 90 credit hours. Programs are encouraged to begin advising students early in their major so that they are aware of the program and, if interested, can complete their bachelor's degree requirements in a way that facilitates completion of the program. Once admitted as an undergraduate, Program Directors should ensure that students are enrolled using the plan code associated with the Accelerated Bachelor's/Master's program. Using the plan code associated with the Accelerated Bachelor's/Master's program will ensure that students may be easily identified as they move through the program. Students will not officially matriculate into the master's degree program and be labeled as a graduate student by the university, with accompanying changes to tuition and Financial Aid (see below), until the undergraduate degree has been awarded. Once admitted to the graduate program, students must meet the academic standing requirements of their graduate program as they complete the program curriculum.

1 Programs that have specialized accreditation will adhere to the admissions criteria provided by, or approved by, their specialized accreditors.

2 The program will identify appropriate indicators of student readiness for graduate coursework (e.g., high-level performance in 300 level courses). Recognizing differences between how majors are designed, we do not specify a blanket requirement.

[3] If students choose not to enroll in the Accelerated Bachelor's/Master's program, they still must complete all of the standard requirements associated with the undergraduate degree (e.g., a capstone).

For more information on Admissions requirements, visit here (https://gpem.luc.edu/portal/admission/?tab=home).

Curriculum

Level and progression of courses. The Accelerated Bachelor's/Master's programs are designed to be competitive and attractive to our most capable students. Students admitted to Accelerated Bachelor's/Master's programs should be capable of meeting graduate level learning outcomes. Following guidance from the Higher Learning Commission, only courses taken at the 400 level or higher (including 300/400 level courses taken at the 400 level) will count toward the graduate program.[1,2] Up to 50% of the total graduate level credit hours, required in the graduate program, may come from 300/400 level courses where the student is enrolled in the 400 level of the course. Further, at least 50% of the credit hours for the graduate program must come from courses that are designed for and restricted to graduate students who have been admitted to a graduate program at Loyola (e.g., enrolled in plan code that indicates the Accelerated Bachelor's/Master's program, typically ending with the letter "D").[3]

In general, graduate level coursework should not be taken prior to admission into the Accelerated Bachelor's/Master's program. Exceptions may be granted for professional programs where curriculum for the Accelerated Bachelor's/Master's program is designed to begin earlier. On the recommendation of the program's Graduate Director, students may take one of their graduate level courses before they are admitted to the Accelerated Bachelors/Master's program if they have advanced abilities in their discipline and course offerings warrant such an exception.[4] Undergraduate degree requirements outside of the major are in no way impacted by admission to an Accelerated Bachelor's/Master's program.[5]

Shared credits. Undergraduate courses (i.e., courses offered at the 300 level or below) cannot be counted as shared credits nor count towards the master's degree. Up to 50% of the total graduate level credit hours, required in the graduate program, may be counted in meeting both the undergraduate and graduate degree requirements. Of those shared credits, students in an Accelerated Bachelor's/Master's program should begin their graduate program with the standard introductory course(s) for the program whenever possible. So that students may progress through the Accelerated Bachelor's/Master's program in a timely manner, undergraduate programs are encouraged to design their curriculum such that a student can complete some required graduate credit hours while completing the undergraduate degree. For instance, some of the graduate curriculum should also satisfy electives for the undergraduate major.

The program's Graduate Director will designate credit hours to be shared through the advising form and master's degree conferral review process. Shared credit hours will not be marked on the undergraduate record as having a special status in the undergraduate program. They will be included in the student's undergraduate earned hours and GPA. Graduate credit hours taken during the undergraduate program will not be included in the graduate GPA calculation.

[1] If students wish to transfer credits from another university to Loyola University Chicago, the program's Graduate director will review the relevant syllabus(es) to determine whether it meets the criteria for a 400 level course or higher.

[2] Programs with specialized accreditation requirements that allow programs to offer graduate curriculum to undergraduate students will conform to those specialized accreditation requirements.

[3] In rare cases, the Graduate Director may authorize enrollment in a 400-level course for a highly qualified and highly motivated undergraduate, ensuring that the undergraduate's exceptional participation in the graduate class will not diminish in any way the experience of the graduate students regularly enrolled.

[4] For example, if a particular course is only offered once every 2-3 years, and a student has demonstrated the necessary ability to be successful, the Graduate Director may allow a student to take a graduate level course to be shared prior to the student being formally admitted to the graduate program. See, also, footnote 3.

[5] Students should not, for example, attempt to negotiate themselves out of a writing intensive requirement on the basis of admission to a graduate program.

Graduation

Degrees are awarded sequentially. All details of undergraduate commencement are handled in the ordinary way as for all students in the School/College/Institute. Once in the graduate program, students abide by the graduation deadlines set forth by the graduate program. Students in these programs must be continuously enrolled from undergraduate to graduate degree program unless given explicit permission by their program for a gap year or approved leave of absence.

LEARNING OUTCOMES

You will graduate with public health competencies in the areas of quantitative and qualitative data collection, evidence-based approaches, public health and health care systems, planning and management, policy, leadership, communication, interprofessional practice, and systems thinking. More specifically, public health foundational competencies attained through the MPH curriculum. Students in the BS/MPH program will achieve the following goals:

1. **Evidence-based Approaches to Public Health:** Apply epidemiological methods to the breadth of settings and situations in public health practice; Select quantitative and qualitative data collection methods appropriate for a given public health context; Analyze quantitative and qualitative data using biostatistics, informatics, computer-based programming and software, as appropriate; and Interpret results of data analysis for public health research, policy or practice.
2. **Public Health & Health Care Systems:** Compare the organization, structure and function of health care, public health and regulatory systems across national and international settings; and Discuss the means by which structural bias, social inequities and racism undermine health and create challenges to achieving health equity at organizational, community and societal levels.
3. **Planning & Management to Promote Health:** Assess population needs, assets and capacities that affect communities' health; Apply awareness of cultural values and practices to the design or implementation of public health policies or programs; Design a population-based policy, program, project or intervention; Explain basic principles and tools of budget and resource management; and Select methods to evaluate public health programs.
4. **Policy in Public Health:** Discuss multiple dimensions of the policy-making process, including the roles of ethics and evidence; Propose strategies to identify stakeholders and build coalitions and partnerships for influencing public health outcomes; Advocate for political, social or economic policies and programs that will improve

health in diverse populations; and Evaluate policies for their impact on public health and health equity.

5. **Leadership:** Apply principles of leadership, governance and management, which include creating a vision, empowering others, fostering collaboration and guiding decision making; and Apply negotiation and mediation skills to address organizational or community challenges.
6. **Communication:** Select communication strategies for different audiences and sectors; Communicate audience-appropriate public health content, both in writing and through oral presentation; and Describe the importance of cultural competence in communicating public health content.
7. **Interprofessional Practice:** Perform effectively on interprofessional teams.
8. **Systems Thinking:** Apply systems thinking tools to a public health issue.
9. **BS Learning Outcomes:** Explain the physical, biological, and chemical structure and function of ecosystems; Examine the causes and consequences of environmental change at local to global scales; Apply scientific knowledge to evaluate policy, management, and other solutions that aim to enhance environmental sustainability; and Create an action plan for leading a professional and personal life that promotes environmental sustainability.

SES Shared Learning Outcomes

All SES majors share the following Program Learning Objectives, in addition to their unique major-specific Program Learning Objectives:

1. Articulate the foundational principles of natural and social sciences and humanities essential to solving environmental problems.
2. Critically evaluate the accuracy and credibility of information relating to environmental topics.
3. Employ knowledge and skills to design and implement solutions that contribute to a just and sustainable world.
4. Exemplify the values of environmental and social justice through actions to care for our common home and one another.

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