Environmental Sciences: Environmental Health

The discipline of environmental health encompasses understanding and addressing the inter-relationships of the environment and human health, including the effects of biological, chemical and physical factors, as well as social environments on health. Clean air, stable climate, adequate water, sanitation and hygiene, safe use of chemicals, protection from radiation, healthy and safe workplaces, sound agricultural practices, health-supportive cities and built environments, and functioning ecosystems are all prerequisites for good health. As environmental health scientists, graduates of this program will work to protect human health and well-being based on an integrated understanding of human-environment interrelationships and by fostering both healthy communities and healthy ecosystems.

Students build on foundational training in the natural sciences with coursework in ecology, environmental health, soils, water resources, microbiology, physiology, toxicology and epidemiology. Courses in risk assessment, environmental laws and regulations, geographic information systems and statistics provide additional skills. Hands-on experience is gained through fieldtrips, a required environmental health internship and the capstone field course for LRES. Students in this option are eligible for national environmental health scholarships and internships. This is a flexible option with sufficient elective credits to allow students to specialize or earn a minor in any area of the interdisciplinary curriculum, such as environmental law, water and health, entomology/vectorborne disease, global health, one health, toxicology, epidemiology, outdoor recreation safety and more.

Career opportunities: Students earn a bachelor's degree in environmental science as well as a nationally accredited environmental health degree. As the only accredited environmental health BS degree in the Northern Plains, graduates are well prepared for and go to work as environmental health professionals in the public and private sectors, or go on to graduate school in environmental health, occupational health and safety, risk assessment, epidemiology or toxicology, or pursue medical school, the US Public Health Service or a career in environmental law and policy.

Freshman Year	**Credits**
CHMY 141 - College Chemistry I & CHMY 142 - College Chemistry I Lab	4
BIOB 160 - Principles of Living Systems (F, S) or BIOB 260 - Cellular and Molecular Biology	4
M 151Q - Precalculus (F, S, Su) or M 161Q - Survey of Calculus or M 171Q - Calculus I	4
CHMY 143 - College Chemistry II & CHMY 144 - College Chemistry II Lab	4
GPHY 284 - Intro to GIS Science & Cartog	3
Core and/or Electives	11
Year Total:	30
Sophomore Year	**Credits**
BIOM 210RN - Environmental Health Science (F)	3
CHMY 211 - Elements of Organic Chemistry & CHMY 212 - Elements of Organic Chemistry Lab or CHMY 321 and CHMY 322 or CHMY 123 - Introduction to Organic Chemistry and Biochemistry	5
PHSX 205 - College Physics I (F, S, Su)	4
NRSM 240 - Natural Resource Ecology (F) or NRSM 101 - Natural Resource Conservation or BIOE 370 - General Ecology or BIOM 415 - Microbial Diversity, Ecology, and Evolution or SFBS 146 - Introduction to Sustainable Food and Bioenergy Systems	3
BIOH 185 - Integrated Physiology I or BIOH 201 and BIOH 211 or ANSC 265 and ANSC 266 or KIN 221 - Health Anatomy & Physiology	0-4
BIOB 318 - Biometry or STAT 216Q - Introduction to Statistics or HDFS 271 - Statistical Measures of Well-Being	3
BIOM 250 - Microbiology for Health Sciences: Infectious Diseases	3
CORE and/or Electives	7
Year Total:	28-32
Junior Year	**Credits**
BIOM 360 - General Microbiology (F, S)	5
MBEH 498 - Internship (F, S, Su))	3
EENV 387 - Environmental Laws and Regulations	3
CORE and/or Electives	19
Year Total:	30
Senior Year	**Credits**
BIOM 494 - Seminar/Workshop & BIOM 494 - Seminar/Workshop or MBEH 490R - Undergraduate Research	2-3
CHTH 440 - Principles of Epidemiology (F)	3
ENSC 407 - Environmental Risk Assessment (F)	3
BIOM 425 - Toxicology: Science of Poisons	3
CORE and/or Electives	18-19
Year Total:	29-31
Total Program Credits:	**120**

Required Electives

Students must take a minimum of 12 credits of electives applicable to environmental health. While the courses listed in this first section are particularly recommended, and the second section lists other eligible electives; students work with their advisor to select electives most relevant to their career goals (even if not listed here).

Recommended electives

A minimum of 120 credits is required for graduation, with at least 42 course credits at 300 level or above.

BIOM 419	Programming for Biologists (Programming for Biologists)	3
BIOM 430	Applied and Environmental Microbiology	4
BIOH 303	Global Diseases and Health Disparities	3
LS 191	Special Topics (Introduction to Global Health (F))	3
ENSC 272CS	Water Resources (F)	3
ENSC 245IN	Soils (F)	3
ARCH 231CS	Issues in Sustainability	3
WRIT 221 or WRIT 326	Intermediate Tech Writing Advanced Writing	3
STAT 217	Intermediate Statistical Concepts	3

or STAT 337	Intermediate Statistics with Introduction to Statistical Computing	
CHTH 210	Foundations in Community Health	3
CHTH 428	Health Disparities (take alternate pre-reqs)	3

Electives: Other

A minimum of 120 credits is required for graduation, with at least 42 course credits at 300 level or above.

MBEH 490R	Undergraduate Research	1-6
MBEH 492	Independent Study	1-3
AGSC 465R	Health, Agriculture, Poverty (F, S)	4
BCH 380 & BCH 381	Biochemistry and Biochemistry Lab	5
BIOE 375	Ecological Responses to Climate Change	3
BIOH 201	Human Anatomy and Physiology I (F)	5
BIOH 303	Global Diseases and Health Disparities (S)	3
BIOM 400	Medical Microbiology (S)	3
BIOM 405	Host-Associated Microbiomes (S)	3
BIOM 410	Microbial Genetics (S)	3
BIOM 435	Virology (F)	3
BIOM 450	Microbial Physiology (F)	3
BIOM 452	Soil & Envirnmntl Microbiology (F)	3
BIOB 410	Immunology (F, S)	3
BIOO 262IN	Introduction to Entomology	3
BMGT 235	Management (F)	3
CHMY 323 & CHMY 324	Organic Chemistry II and Organic Chemistry II Lab	4
CHTH 317	Health Behavior Theories	3
CHTH 428	Health Disparities	3
MBEH 498	Internship	2-12
ENSC 353	Environmental Biogeochemistry	3
ENSC 444	Watershed Hydrology (F)	3
ENSC 460	Soil Remediation (S)	3
ENSC 461	Restoration Ecology	3
ERTH 101IN	Earth System Sciences	4
GPHY 357	GPS Fund/App in Mapping (F)	3
GPHY 384	Adv GIS and Spatial Analysis (F, S)	3
GPHY 402	Water and Society	3
M 161Q	Survey of Calculus (Calculus can count as elective if M151 taken at MSU)	4
or M 171Q	Calculus I	
NASX 310	Native Cultures of North America	3
or NASX 450	History of American Indians	
NASX 415	Native Food Systems	3
NASX 476	American Indian Policy and Law	3
NRSM 430	Natural Resource Law	3
NUTR 221CS	Basic Human Nutrition (F, S, Su)	3
NUTR 226	Food Fundamentals (S)	3
NUTR 227	Food Fundamentals Lab (F, S)	2
NUTR 322	Food Service System Management (F)	3
PHSX 207	College Physics II	4
SFBS 346	Sustainable Food and Bioenergy Systems Summer Field Course	1
SFBS 451R	Sustainable Food Systems	3
STAT 411	Methods for Data Analysis I	3
STAT 412	Methods for Data Analysis II	3