



ENVIRONMENTAL MICROBIOLOGY MINOR


Microbes are responsible for controlling the movement of energy, mass, and information through ecosystems (natural, artificial, and human). The environmental microbiology minor will develop students understanding of fundamental concepts in microbiology (cell structure, physiology, metabolism) together with an understanding of the evolutionary and ecological processes that shape their activities in earth's environments. By completing the minor, students will gain training to prepare them for a wide variety of microbiology careers, including environmental sciences, health sciences, biotechnology industries, and more.

In addition to the program requirements listed below, students must:

- take at least nine hours of their minor "core" requirements at UNC–Chapel Hill
- earn a minimum cumulative GPA of 2.000 in the minor core requirements. Some programs may require higher standards for minor or specific courses.

For more information, please consult the degree requirements section of the catalog (<https://catalog.unc.edu/undergraduate/degree-requirements/>).

Code	Title	Hours
Core Requirements		
One course emphasizing microbiology fundamentals, chosen from:		3-4
EMES 204	 The Microbial World: Foundations in Structure, Metabolism, and Ecology ¹	
BIOL 422 & 422L	Microbiology and Microbiology Laboratory ¹	
MCRO 251	Introductory Medical Microbiology	
Four courses emphasizing microbial ecological theory, evolution, or within the environment, chosen from:		12
EMES 443	Marine Microbiology	
EMES 444/BIOL 456/ENEC 444	Marine Phytoplankton	
EMES 446/BIOL 452	Marine Microbial Symbioses: Exploring How Microbial Interactions Affect Ecosystems and Human Health	
EMES 447	Microbial Ecological Genomics	
EMES 450	Biogeochemical Processes	
EMES/BIOL 466	Environmental Microbiology	
BIOL 480	Discoveries in Prevention and Cure of Infectious Disease in London ^H	
BIOL 481	Biology, History, and Evolution of Epidemic Diseases	
BIOL 568	Disease Ecology and Evolution	
BIOL 620	Bacterial Genetics with Emphasis on Pathogenic and Symbiotic Interactions	
ENVR 135	 Environment-ECUIPP Lab: Connecting with communities through environmental research for Public Health ³	

or ENVR 335  Adv Environ-ECUIPP Lab: Connecting with Communities Through Environmental Research for PH Protection

ENVR 412	Ecological Microbiology
ENVR 421	Environmental Health Microbiology
ENVR 705	One Health: Philosophy to Practical Integration (3 credits required)
--- *95	Mentored research course with a microbiology focus (3 credits required) ²

Total Hours 15-16

H Honors version available. An honors course fulfills the same requirements as the nonhonors version of that course. Enrollment and GPA restrictions may apply.

¹ Prerequisite(s) required. Check course description for details.

² Requires permission by the program director.

³ ENVR 335 is repeatable for credit, but only 3 credit hours may count toward the minor.

Department Programs

Majors

- Geological Sciences Major, B.A.–Earth Science (<https://catalog.unc.edu/undergraduate/programs-study/geological-sciences-major-ba-earth-science-concentration/>)
- Earth and Marine Sciences Major, B.S. (<https://catalog.unc.edu/undergraduate/programs-study/earth-marine-sciences-major-bs/>)

Minors

- Environmental Microbiology Minor (p. 1)
- Geological Sciences Minor (<https://catalog.unc.edu/undergraduate/programs-study/geological-sciences-minor/>)
- Marine Sciences Minor (<https://catalog.unc.edu/undergraduate/programs-study/marine-sciences-minor/>)

Graduate Programs

- M.S. in Geological Sciences (<https://catalog.unc.edu/graduate/schools-departments/geological-sciences/>)
- M.S. in Marine Sciences (<https://catalog.unc.edu/graduate/schools-departments/marine-sciences/>)
- Ph.D. in Geological Sciences (<https://catalog.unc.edu/graduate/schools-departments/geological-sciences/>)
- Ph.D. in Marine Sciences (<https://catalog.unc.edu/graduate/schools-departments/marine-sciences/>) (<https://catalog.unc.edu/graduate/schools-departments/geological-sciences/>)

Contact Information

Department of Earth, Marine, and Environmental Sciences

Visit Program Website (<https://emes.unc.edu/>)

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