**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/).

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

**Total Hours** 15-16

\(^1\) 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**


**Minors**

- Environmental Microbiology Minor (p. 1)
- Geological Sciences Minor (https://catalog.unc.edu/undergraduate/programs-study/geological-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/)

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