Applied and Environmental Microbiology

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Degree Offered

- Master of Science with a major in Applied and Environmental Microbiology

Admissions

M.S. APPLIED AND ENVIRONMENTAL MICROBIOLOGY

In order for a student to be admitted to the program, the applicant normally must fulfill the following admission criteria to be considered:

- Possess a baccalaureate degree.
- Have a minimum undergraduate grade point average of 2.75 (3.0 for acceptance as a regular graduate student).
- Have an adequate academic aptitude at the graduate level as measured by the Graduate Record Examination (GRE) or other tests/evidence.
- Provide three letters of reference from persons acquainted with the applicant’s professional work, experience, or academic background.
- Submit a written statement of approximately 500 words indicating the applicant’s goals and objectives relative to receiving a graduate degree.

International students have the additional requirement to submit a minimum score of 213 on the computer based TOEFL examination if their native language is not English. Interviews are encouraged but not required.

ACCELERATED B.S./M.S. APPLIED AND ENVIRONMENTAL MICROBIOLOGY

The ABM-AEM program will directly admit first year students (early admission) or admit students after the completion of at least 60 credit hours.

Early Admission

For early admission, entering WVU first-year students must have a minimum high school GPA of 3.0 and SAT or ACT test scores at or above the 70th percentile. Early admitted students must meet the standards described below for regular admission to continue in the ABM-AEM program after the completion of 60 credits. Students must provide a personal statement of no less than 500 words identifying the applicant’s goals and objectives in obtaining the ABM-AEM degree and three letters of reference, at least two of which are required from persons familiar with the applicant’s academic performance including those serving in an advisory role such as teachers, school administrators, or a guidance counselor.

Regular Admission

Only currently enrolled WVU students may be considered for regular admission to the program. Transfer students must complete at least 24 credit hours as degree-seeking students at WVU before applying to the program. ABM-AEM is not available to students seeking a second (or subsequent) bachelor's degree. The minimum standard for regular admission is a cumulative undergraduate GPA of 3.0, with no provisional admissions allowed. Students must provide a personal statement of no less than 500 words identifying the applicant's goals and objectives in obtaining the ABM-AEM degree and three letters of reference, at least two of which are required from persons familiar with the applicant's academic performance including those serving in an advisory role such as teachers, school administrators, or a guidance counselor.

A candidate for the M.S. degree in Applied and Environmental Microbiology must meet all University, College, Division, and Program requirements as outlined in the WVU Graduate Catalog.

Program Requirements

All M.S. degree candidates are required to follow a planned program of study. The student develops the plan of study during their first year in the program in conjunction with the graduate committee. The plan must be approved by the Director of the Division and the Associate Dean for Academic Affairs of the Davis College.

Thesis Option:

A minimum cumulative GPA of 3.0 is required in all courses applied toward degree requirements.

Select one of the following:

| STAT 511 | Statistical Methods 1 |
## BIOS 601 & BIOS 602
Applied Biostatistics 1 and Applied Biostatistics Lab

<table>
<thead>
<tr>
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<tr>
<td>STAT 512</td>
<td>Statistical Methods 2</td>
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<tr>
<td>BIOS 603 &amp; BIOS 604</td>
<td>Applied Biostatistics 2 and Applied Biostatistics 3</td>
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<th>Discipline-Oriented Coursework</th>
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<td>(AEM, PPTH, AGRN, ENTO, AGBI, BIOL, GEN, HORT, MICB, IMMB, PLSC)</td>
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<th>Total Hours</th>
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### Non-Thesis Option:

A minimum cumulative GPA of 3.0 is required in all courses applied toward degree requirements.

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<td>BIOS 601 &amp; BIOS 602</td>
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<td>BIOS 603 &amp; BIOS 604</td>
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<td>AGBI 612</td>
<td>General Biochemistry</td>
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<td>AGRN 516</td>
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* Students must complete a minimum of 30 total hours, of which at least 24 hours must be coursework other than research, thesis, project, internship, etc. credits.

## Accelerated Program Requirements

A minimum GPA of 3.0 is required.

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<td>AEM 445</td>
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<td>or AEM 545</td>
<td>Food Microbiology</td>
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<td>AEM 593</td>
<td>Special Topics</td>
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<td>GEN 521</td>
<td>Basic Concepts of Modern Genetics</td>
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<tr>
<td>PPTH 409</td>
<td>Nematology</td>
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<tr>
<td>or PPTH 509</td>
<td>Nematology</td>
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<td>PPTH 503</td>
<td>Mycology</td>
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<tr>
<td>STAT 511</td>
<td>Statistical Methods 1</td>
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| Electives | 24 |
### Oral Examination

**Total Hours**: 36

#### First Year

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<thead>
<tr>
<th>Fall</th>
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<td>CHEM 115 (GEF 2)</td>
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<td>4 PLSC 206</td>
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<td>ENGL 101 (GEF 1)</td>
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<td>3 STAT 211</td>
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<td>Free Elective</td>
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#### Second Year

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<th>Spring</th>
<th>Hours</th>
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<td>&amp; AGRM 203</td>
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<tr>
<td>CHEM 233</td>
<td></td>
<td>4 CHEM 234</td>
<td>4</td>
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<tr>
<td>&amp; CHEM 235</td>
<td></td>
<td>&amp; CHEM 236</td>
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<tr>
<td>ENGL 102 (GEF 1)</td>
<td></td>
<td>3 GEF 5</td>
<td>3</td>
</tr>
<tr>
<td>GEF 4</td>
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<td>3 Free Electives</td>
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<td>Free Elective</td>
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#### Third Year

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<th>Spring</th>
<th>Hours</th>
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<tbody>
<tr>
<td>PHYS 101 (GEF 8)</td>
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<td>4 PHYS 102 (GEF 8)</td>
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<tr>
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<td>GEF 6</td>
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#### Fourth Year

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<thead>
<tr>
<th>Fall</th>
<th>Hours</th>
<th>Spring</th>
<th>Hours</th>
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<tbody>
<tr>
<td>AGBI 410</td>
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<td>3 AEM 401</td>
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<td>GEN 371</td>
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<td>Graduate Course 2</td>
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<td><strong>13</strong></td>
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#### Fifth Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>Hours</th>
<th>Spring</th>
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<tbody>
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Total credit hours: 144

**NOTE**: See Undergraduate Catalog for Bachelor's degree requirements (B.S. in Applied Environmental Microbiology, Accelerated Program).

### Major Learning Outcomes

**APPLIED AND ENVIRONMENTAL MICROBIOLOGY**

Students will acquire fundamental knowledge of applied and environmental microbiology and associated fields such as biochemistry, genetics, and biology.

Students will acquire detailed knowledge of their particular subdiscipline or research area, including the scientific literature fundamental to their discipline and the ability to stay current on scientific literature.

Students will acquire technical skills in the laboratory.
Students will develop the ability to communicate in writing and orally about scientific concepts and the results of their research.

Students will develop the ability to design, conduct, and interpret the results of experiments.