Applied and Environmental Microbiology

Matthew Jenks, Division Director of Plant and Soil Sciences
email: majenks@mail.wvu.edu

Daniel Panaccione, Assistant Director of Graduate Programs
email: danpan@mail.wvu.edu

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. Regular admission may not be any earlier than the semester in which an undergraduate student is expected to complete 60 credits or any later than the semester after which the student needs two additional semesters to complete the 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:		3
STAT 511	Statistical Methods 1	

BIOS 601 & BIOS 602	Applied Biostatistics 1 and Applied Biostatistics Lab	
Select one of the following:		3
STAT 512	Statistical Methods 2	
BIOS 603 & BIOS 604	Applied Biostatistics 2 and Applied Biostatistics 3	
Seminar		3
AGRN 796	Graduate Seminar	
Research		6
AEM 797	Research	
Discipline-Oriented Coursework		15
(AEM, PPTH, AGRN, ENTO, AGBI, BIOL, GEN, HORT, MICB, IMMB, PLSC)		
Total Hours		30

Non-Thesis Option:

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

Select one of the following:		3
STAT 511	Statistical Methods 1	
STAT 512	Statistical Methods 2	
BIOS 601 & BIOS 602	Applied Biostatistics 1 and Applied Biostatistics Lab	
BIOS 603 & BIOS 604	Applied Biostatistics 2 and Applied Biostatistics 3	
Graduate Chemistry/Biochemistry Course		3
AGBI 610	General Biochemistry	
AGBI 612	General Biochemistry	
AGRN 516	Soil Chemistry	
Seminar		3
AGRN 796	Graduate Seminar	
Teaching Practicum		2
AEM 790	Teaching Practicum	
Discipline-Oriented Coursework		15
(AEM, PPTH, AGRN, ENTO, AGBI, BIOL, GEN, HORT, MICB, IMMB, PLSC)		
Independent Study		3
AEM 795	Independent Study	
Electives		7
Total Hours		36

* 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.

Choose from the following courses:		12
AEM 445	Food Microbiology	
or AEM 545	Food Microbiology	
AEM 593	Special Topics	
GEN 521	Basic Concepts of Modern Genetics	
PPTH 409	Nematology	
or PPTH 509	Nematology	
PPTH 503	Mycology	
STAT 511	Statistical Methods 1	
Electives		24

Oral Examination	
Total Hours	36

First Year

Fall	Hours	Spring	Hours
AGRL 111	1	CHEM 116 (GEF 8)	4
CHEM 115 (GEF 2)	4	PLSC 206	4
ENGL 101 (GEF 1)	3	STAT 211	3
MATH 150 (GEF 3)	3	Free Electives	4
Free Elective	3		
	14		15

Second Year

Fall	Hours	Spring	Hours
AGRN 202 & AGRN 203	4	AEM 341	4
CHEM 233 & CHEM 235	4	CHEM 234 & CHEM 236	4
ENGL 102 (GEF 1)	3	GEF 5	3
GEF 4	3	Free Electives	4
Free Elective	3		
	17		15

Third Year

Fall	Hours	Spring	Hours
PHYS 101 (GEF 8)	4	PHYS 102 (GEF 8)	4
PPTH 401	4	Restricted Electives	9
Restricted Elective	3	GEF 7	3
GEF 6	3		
	14		16

Fourth Year

Fall	Hours	Spring	Hours
AGBI 410	3	AEM 401	4
GEN 371	4	Graduate Course 3	3
Restricted Elective	3	Graduate Course 4	3
Graduate Course 1	3	Restricted Elective	3
Graduate Course 2	3		
	16		13

Fifth Year

Fall	Hours	Spring	Hours
Graduate Electives	12	Graduate Electives	12
	12		12

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.