

## MICROBIOLOGY MAJOR INFORMATION

### Department of Microbiology

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### Required Prerequisites or Supplements to the Microbiology Major

The courses do not count toward the Microbiology Major, but some are prerequisites for the required microbiology major courses. All of them must be completed prior to graduation.

• Biology 1113, 1114	8 hr.
• Mathematics 1156 or 1151 and one of the following: Mathematics 1152 or 1157, Statistics 1450, 2450 or 2480	8-10 hr.
• Chemistry 1210, 1220	10 hr.
• Chemistry 2510, 2520, 2540	10 hr.
• Physics 1200, 1201	10 hr.

**\*Honors equivalents can substitute and note: additional chemistry and/or organic chemistry courses may be required/suggested for pre-professional students.**

Please, contact your Arts and Sciences Academic Advisor, Mary McLaughlin, (614-292-6961) for a list of general education requirements (GE requirements). Your advisor is located in room 384 Biological Sciences Building.

## Microbiology Major Courses

The Microbiology Major consists of a minimum of 30 semester credit hours, whereof the required core courses make up 21 semester credit hours. All students must complete 6 required core courses and 9 semester hours of elective courses (outlined below).

The elective microbiology courses are divided into Group 1 and Group 2. Students must take at least 3 of the 9 semester hours from Group 1, but may also take all 9 semester hours from this group.

Students are not required to take any Group 2 courses, but are allowed to take up to 6 hours of the 9 elective semester hours from Group 2. Students are encouraged to discuss with their microbiology major advisor any courses that are not listed in Group 2 that would be suitable to include in the Microbiology Major.

A total of 3 semester hours graded S/U may count toward the microbiology major. Usually these are earned through Individual Study, Undergraduate Research or Honors Research (Microbiology 4193, 4998, 4998H, 4999 or 4999H). These courses can be scheduled by contacting individual faculty members in the Microbiology Department. Students are also encouraged to discuss research options with the Undergraduate Research Office (uro@osu.edu). Other major elective courses graded S/U are Microbiology 4591S and 7899.

Students must receive a C- or better in all required core courses as well as the elective courses.

### Microbiology Major Required Core Courses 21 semester credit hours

Department Course No.	Credit Hours	Course Title (Semester taught)	Prerequisites
Biochemistry 4511	4	Introduction to Biological Chemistry <b>(Su, Au, Sp)</b>	Biology 1114, Chemistry 1220, Chemistry 2510
Microbiology 4100	5	General Microbiology <b>(Au,Sp)</b>	Biology 1114, Chemistry 2510 or concurrent
Microbiology 4110	3	Microbial Pathogens and Immunobiology <b>(Sp)</b>	Microbiology 4100 (C- or better)
Microbiology 4120	3	Microbial Physiology and Diversity <b>(Au)</b>	Microbiology 4100 (C- or better), Biochem 4511 or concurrently. Not open to students who completed Microbiology 661
Microbiology 4130	3	Microbial Genetics <b>(Sp)</b>	Microbiology 4100 (C- or better)
Microbiology 4140	3	Molecular Microbiology Laboratory <b>(Au,Sp)</b>	Microbiology 4100 (C- or better) Microbiology 4130 or Microbiology 4130 concurrently. Not open to students who completed microbiology 581.02

### Microbiology Major Elective Courses

Complete a minimum of 9 semester credit hours of elective courses from  
Group 1/Group 2

#### Group 1

Complete between 3 and 9 semester credit hours from Group 1

Micro. Course No.	Credit Hours	Course Title (Semester taught)	Prerequisites
Microbiology 5122	2	Immunobiology <b>(Au)</b>	Microbiology 4000 or 4100 (C- or better)
Microbiology 4591S	1 <i>Graded S/U</i>	DNA Fingerprinting; Service learning course <b>(Sp)</b>	Students present workshops at Columbus Public High Schools
Microbiology 5161H	3	Bioinformatics and Molecular Microbiology ( <i>offered infrequently</i> )	Microbiology 4130 or Molecular Genetics 4500, and Biochemistry 4511; or permission of instructor
Microbiology 5129	3	Cellular and Molecular Biology of Pathogenic Eukaryotes <b>(Sp)</b>	Microbiology 4100 or permission of instructor
Microbiology 5536	3	Food Microbiology Lecture <b>(Au)</b>	Microbiology 4000 or 4100 (C- or better)
Microbiology 5546	3	Food Microbiology Laboratory <b>(Sp)</b>	Microbiology 5536
Microbiology 5147	3	Eukaryotic Pathogens <b>(Au)</b>	Microbiology 4100 (C- or better); or Molecular Genetics 4500 or 4606; or Biochemistry 4511
Microbiology 5149	3	Introductory Virology <b>(Sp)</b>	Microbiology 4100 (C- or better)
Microbiology 5150	3	Microbial Ecology <b>(TBA)</b>	C- or better in Microbiology 4000 or equivalent
Microbiology 5155	3	Environmental Microbiology <b>(Au14)</b>	C- or better in Microbiology 4000 or equivalent
Microbiology 5169	3	Microbial Evolution <b>(AU)</b>	6 semester hours of biological sciences course work
Microbiology 5169H	3	Microbial Evolution <b>(TBA)</b>	6 semester hours of biological sciences course work
Microbiology 4193 4998 4998H 4999 4999H	1-3 <i>Graded S-U</i>	Individual Studies Undergrad. Research Honors Undergrad. Research Undergrad. Research Thesis Honors Undergrad. Research Thesis  <b>(Au,Sp,Su)</b>	Permission of instructor. Maximum of 3 credit hours for any combination of these courses can be counted toward the Major.
Microbiology 6020	3	Microbial Physiology and Biochemistry <b>(Au)</b>	Permission of instructor
Microbiology 6080	3	Advanced Microbial Genetics <b>(Sp)</b>	Microbiology 4130 or Molecular Genetics 4500 or 4606
Microbiology 7010	3	Cellular and Molecular Immunology <b>(Au)</b>	Biochemistry 5613, Molecular Genetics 4500 or 4606

Micro. Course No.	Credit Hours	Course Title (Semester taught)	Prerequisites
Microbiology 7020	3	Microbial Physiology Meets Pathogenesis <b>(Sp)</b>	Permission of instructor
Microbiology 7023	3	Molecular Immunology <b>(Au)</b>	Permission of instructor
Microbiology 7724	3	Advanced Molecular Pathogenesis <b>(Au)</b>	Permission of instructor
Microbiology 7536	3	Advanced Food Microbiology <b>(Au)</b>	Microbiology 5536 and Chemistry 1220
Microbiology 7060	3	Advanced Topics in Molecular Microbiology <b>(Sp)</b>	Microbiology 6020 or permission of instructor
Microbiology 7899	1 <i>Graded S/U</i>	Microbiology Colloquium <b>(Au,Sp)</b>	Repeatable for maximum of 2 credit hours.

## Group 2

### Complete between 0 and 6 semester credit hours from Group 2

Department Course No.	Credit Hours	Course Description (semesters taught)	Prerequisites
Microbiology 3300	2	The Biology of Pollution <b>(Au)</b>	3 credit hours of biology
Biochemistry 5621	4	Introduction to Biological Chemistry Laboratory <b>(Au)</b>	Biochemistry 4511 or 5613 or equivalent
Molecular Genetics 4500	3	General Genetics <b>(Au,Sp,Su)</b>	Biology 1113 and 3 additional hours in biological sciences
Molecular Genetics 4606	4	Molecular Genetics I <b>(Au,Sp)</b>	Biology 1113, Biology 1114, or Chemistry 1210 or equiv.
MVIMG 5000	2	Evolution of Emerging Viruses <b>(Sp)</b>	2 years of coursework in the biological sciences suggested
Plant Pathology 5010	2	Phylobacteriology <b>(Sp)</b>	Plant Pathology 3001 and 3002 or 6001, Microbiology 4100, or permission of instructor
Plant Pathology 5020	2	Introduction to Plant Virology <b>(Sp)</b>	Plant Pathology 3001, Biochemistry 4511, or Microbiology 4000 or permission of instructor
Plant Pathology 5040	3	Mycology <b>(Au)</b>	Biology 1114 or Plant Pathology 3001
Animal Science 6090	3	Anaerobic Microbiology <b>(Sp)</b>	Microbiology 4100 and Biochemistry 4511
Envir. & Natural Resources 5263	3	Biology of Soil Ecosystems <b>(Sp)</b>	ENR (300) or (301), or permission of instructor with Micro 4100
MVIMG 5696	2	Sexuality, Health and Sexually Transmitted Pathogens <b>(Au)</b>	Basic chemistry, biology, and a general microbiology course are recommended, but not required.
CBE 5765	3	Principles of Biochemical Engineering <b>(Sp)</b>	CBE 2523 or 3610, or Graduate standing or permission of instructor.
ENVENG 5610	4	Advanced Environmental Biotechnology <b>(Sp)</b>	Basic Microbiology or instructor permission
PUBHEHS 6320	3	Global Health and Environmental Microbiology <b>(Au)</b>	

**Sample Curriculum**  
**Microbiology BS**

<b>Year 1</b>	<b>Autumn</b>	<b>Credit Hours</b>	<b>Spring</b>	<b>Credit Hours</b>	<b>Yearly Credit Hours Total</b>
	Gen Chem 1210	5	Gen Chem 1220	5	
	Math 1151 or Math 1156	5	Math 1157 or 1152 Stats 1450 or 2450 or 2480	5 3 3	
	Bio 1113	4	Bio 1114	4	
	Freshman survey	1	GE Course	3	
	<b>Sum</b>	<b>15</b>	<b>Sum</b>	<b>15 - 17</b>	

<b>Year 2</b>	<b>Autumn</b>	<b>Credit Hours</b>	<b>Spring</b>	<b>Credit Hours</b>	<b>Yearly Credit Hours Total</b>
	Org Chem 2510	4	Org Chem 2520	4	
	Physics 1200	5	Org Chem Lab 2540	2	
	GE Course	3	Physics 1201	5	
	GE Course	3	GE Course	3 - 5	
	<b>Sum</b>	<b>15</b>	<b>Sum</b>	<b>14 - 16</b>	

<b>Year 3</b>	<b>Autumn</b>	<b>Credit Hours</b>	<b>Spring</b>	<b>Credit Hours</b>	<b>Yearly Credit Hours Total</b>
	Microbiology 4100	5	Microbiology 4110	3	
	BioChem 4511	4	Microbiology 4130	3	
	GE Course	3	Microbiology Elective 1	3	
	GE Course	4	GE courses	4	
			Research	2	
	<b>Sum</b>	<b>16</b>	<b>Sum</b>	<b>15</b>	

<b>Year 4</b>	<b>Autumn</b>	<b>Credit Hours</b>	<b>Spring</b>	<b>Credit Hours</b>	<b>Yearly Credit Hours Total</b>
	Microbiology 4120	3	Microbiology Elective 3	3	
	Microbiology 4140	3	GE Elective	4	
	Microbiology Elective 2	3	GE Elective	5	
	GE Elective	3	Research	3	
	Research	2			
	<b>Sum</b>	<b>14</b>	<b>Sum</b>	<b>15</b>	<b>29</b>

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