

# MICROBIOLOGY, BS

Students entering the microbiology program typically have interests in science, the environment, or the health professions. High school preparation should include a solid background in mathematics and introductory classes in biology and/or chemistry.

## Admission into the Major

Students are expected to formally declare a major no later than the fourth semester of full-time enrollment (or at 61 semester hours for transfer students). Students may declare a major by completing the Change of Major/Minor Application online under the Student tab of myBama. The department recommends that students declare a microbiology major as soon as possible.

## Special Opportunities

The Biological Sciences Honors Program is available to students majoring in either biology or microbiology after the completion of 16 hours of biological science courses with at least a 3.4 GPA overall and in BSC courses. Admission into the program is made through an application that is submitted to the undergraduate program coordinator. Requirements for the program include: four to eight hours of BSC 390 Honors Thesis Research, maintenance of a 3.4 GPA in BSC courses and overall, and submission and defense of an acceptable honors thesis. Additional details are available in the office of the Department of Biological Sciences.

## Accelerated Master's Program

The Department of Biological Sciences also participates in the Accelerated Master's Program, which allows highly motivated students to pursue closely integrated undergraduate and graduate programs that may lead to the simultaneous completion of requirements for both master's and bachelor's degrees. Students usually apply for admission prior to the junior or senior year. For more information about the Accelerated Master's Program visit [graduate.ua.edu](http://graduate.ua.edu) or consult The University of Alabama graduate catalog.

Students earning the bachelor of science in microbiology degree must complete all University, College and departmental degree requirements. These include the general education requirements, the following major requirements and other sufficient credits to total a minimum of 120 applicable semester hours.

Code and Title	Hours
<b>Major Courses</b>	
Select one of the following:	4
BSC 114 Principles Of Biology I & BSC 115 and Laboratory Biology I	
BSC 118 Honors General Biology I	
Select one of the following:	4
BSC 116 Principles Biology II & BSC 117 and Laboratory Biology II	
BSC 120 Honors Gen Biology II	
BSC 300 Cell Biology	3
BSC 310 Microbiology	3
BSC 311 Microbiology II	3
BSC 312 Microbiology Lab	2
Credit Hours Subtotal:	19
<b>Electives</b>	

Select 18 hours of BSC electives 300 or 400 level	18
Credit Hours Subtotal:	18

### Ancillary Courses

Grades in ancillary courses are not computed into the major GPA.

The major in microbiology requires the successful completion of the following courses outside the major:

CH 100 or CH 101 or CH 117	General Chemistry I - Plus General Chemistry Honors General Chemistry	4 or 5
CH 102 or CH 118	General Chemistry Honors General Chemistry	4
CH 231	Elem Organic Chemistry I	3
CH 232 & CH 237	Elem Organic Chem II and Elem Organic Chem Lab	5
MATH 125 or MATH 145	Calculus I Honors Calculus I	4
Select one of the following:		4
PH 101	General Physics I	
PH 105	General Physics W/Calc I	
PH 125	Honors Gen Ph W/Calculus	
Select one of the following:		4
PH 102	General Physics II	
PH 106	General Physics W/Calc II	
PH 126	Honors Gen Ph W/Calculus II	
Credit Hours Subtotal:		28-29

### Additional Major Requirements <sup>1</sup>

The department offers a number of courses designed to enrich the learning experience of students beyond the traditional classroom setting. These courses include:

BSC 390	Honors Thesis Research
BSC 391	Tutorial In Biol Science
BSC 398	Undergraduate Research
BSC 399	Presentation of UG Research
BSC 403	Intro To Bsc Instruction
BSC 404	Honors Bsc Instruction

**Total Hours** 65-66

### Footnotes

<sup>1</sup> Beyond specific restrictions listed for each course, a total of four hours from this group may be applied to the requirements of the biology major or minor. An additional four hours may be applied as electives to the requirement for 120 hours for the degree. BSC 409 Pre-Health Apprenticeship I and BSC 410 Pre-Health Apprenticeship II is not applicable to the major in biology.

A maximum of 12 hours of 100-level biology courses (BSC 108 Intro Biology Non Maj I, BSC 109 Intro Biology Non Maj II, BSC 114 Principles Of Biology I, BSC 115 Laboratory Biology I, BSC 116 Principles Biology II, BSC 117 Laboratory Biology II, BSC 118 Honors General Biology I or BSC 120 Honors Gen Biology II) may be applied to degree requirements.

## Electives

Other BSC courses must be selected from the following:

Code and Title	Hours
BSC 313 Gen Bacteriology Lab	3
BSC 380 Intro Stats Biology	3
BSC 390 Honors Thesis Research	1-8
BSC 391 Tutorial In Biol Science	1-2
BSC 393 Biology Outreach	2
BSC 396 Resident Study	1-6
BSC 398 Undergraduate Research	1-4
BSC 399 Presentation of UG Research	2
BSC 403 Intro To Bsc Instruction	2
BSC 404 Honors Bsc Instruction	2
BSC 407 Honors Seminar In Bsc	1
BSC 411 Phage Discovery Laboratory	3
BSC 416 Disease Ecology	3
BSC 426 Computational Biology Lab	3
BSC 431 Pathogenic Microbiology	3
BSC 435 Immunology	4
BSC 437 Epidemiology of Pathogens	3
BSC 439 Bch/Molecular Biology Lab	3
BSC 442 Integrated Genomics	4
BSC 444 General Virology	3
BSC 450 Fundamentals of Biochemistry	3
BSC 451 Molecular Biology	3
BSC 453 Biochemistry Lab	3
BSC 456 Microbial Ecology	3
BSC 464 Biology Of Algae	4
BSC 467 Honors Data Man. Vis. in R	3
BSC 472 Mycology	4
BSC 473 Bioinformatics	3
BSC 478 Microbiomes Health & Disease	3
BSC 481 Adv Biostatistics with R	3
BSC 488 Research Seminars in Biology	1

These hours must include two laboratories to be selected from:

Code and Title	Hours
BSC 313 Gen Bacteriology Lab	0 or 3
BSC 390 or BSC 398 Honors Thesis Research <sup>1</sup> Undergraduate Research	1-8
BSC 411 Phage Discovery Laboratory	3
BSC 426 Computational Biology Lab	3
BSC 439 Bch/Molecular Biology Lab	3
BSC 442 Integrated Genomics	4
BSC 453 Biochemistry Lab	3
BSC 464 Biology Of Algae	4
BSC 472 Mycology	4
BSC 478 Microbiomes Health & Disease	3

#### Footnotes

<sup>1</sup> The two laboratory courses may not be fulfilled by BSC 390 Honors Thesis Research AND BSC 398 Undergraduate Research.

## Grade Point Average

A 2.0 grade point average in the major is required for completion of the degree. Please see the Grades and Grade Points section of this catalog for an explanation on grade point average calculations.

## Upper-level Residency

A minimum of 12 hours of 300- and 400-level courses in the major must be earned on this campus.

## Required Minor

The microbiology major does not require a minor.

## Prerequisites

Prerequisites for all BSC courses at the 300- and 400-level must be passed with a minimum grade of C-.

## Restrictions on course attempts

No undergraduate course offered by the Department of Biological Sciences may be attempted more than three times. Mid-semester withdrawal (any withdrawal that results in a final grade of W) is not considered an attempt. Students who, in three attempts, fail to pass a required course or fail to make a C- or better in a Biology course that is a prerequisite for a required upper level course may no longer major in Microbiology.

A major in microbiology prepares students for a wide range of employment opportunities in clinical and public health fields, biotechnology, environmentally related fields, and industries concerning food, water quality, pharmaceuticals, and medical equipment and supplies.

## Types of Jobs Accepted

Recent graduates have worked in entry-level industrial jobs; clinical-medical laboratories; and local, state, or federal government agencies. Others have worked in non-laboratory jobs selling pharmaceuticals and laboratory supplies and equipment used in research facilities, hospitals, and public health areas. Some graduates go into a professional school (e.g., medicine, dentistry, veterinary medicine, pharmacy, optometry, and public health) and others to graduate school for the master's degree, Doctor of Philosophy (PhD), or Doctor of Science (ScD).

## Jobs of Experienced Alumni

Physician, pharmacist, optometrist, veterinarian, laboratory technician, teacher, professor, public health officer, pharmaceutical representative

Learn more about opportunities in this field at the Career Center