Department of Biological Sciences

The Department of Biological Sciences offers three majors that culminate in baccalaureate degrees: biology, marine science/biology double major and microbiology. The department also offers minors in biology, microbiology and marine science.

Biology Major (BS)

Degree Requirements

Students earning the bachelor of science (BS) degree with a major in biology 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.

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 can declare a major by completing the Change of Major/Minor Application online under the Student tab of myBama.

Grade Point Average

A 2.0 grade point average in the major is required for completion of the degree. Please see the Grade Point Average (GPA) section of this catalog for an explanation on grade point average calculations.

Major Courses

The major in biology requires the successful completion of the following 36 semester hours:

Select one of the following: Hours

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSC 114</td>
<td>Principles Of Biology I</td>
<td>4</td>
</tr>
<tr>
<td>&amp; BSC 115</td>
<td>Laboratory Biology I</td>
<td></td>
</tr>
<tr>
<td>or</td>
<td>BSC 118 Honors General Biology I</td>
<td></td>
</tr>
</tbody>
</table>

Select one of the following: Hours

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSC 116</td>
<td>Principles Biology II</td>
<td>4</td>
</tr>
<tr>
<td>&amp; BSC 117</td>
<td>Laboratory Biology II Laboratory</td>
<td></td>
</tr>
<tr>
<td>or</td>
<td>BSC 120 Honors Gen Biology II</td>
<td></td>
</tr>
</tbody>
</table>

BSC 300 Cell Biology 3

BSC 315 Genetics 3

BSC 385 Ecology and Evolution 3

BSC or MS electives above 250 19

Total Hours 36

*Other BSC courses numbered 250 and above, including two laboratory courses from the following list of laboratory courses (also see the Additional Major Requirements section below):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSC 303</td>
<td>Field Zoology</td>
<td>3</td>
</tr>
<tr>
<td>BSC 312 Microbiology Lab</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>BSC 313 Gen Bacteriology Lab</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>BSC 314 Dendrology</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>BSC 320 Freshwater Studies</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>BSC 360 Plant Biology</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>BSC 373 Vertebrate Zoology</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>BSC 376 Invertebrate Zoology</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>BSC 390 Honors Thesis Research</td>
<td>1-8</td>
<td></td>
</tr>
<tr>
<td>BSC 396 Resident Study</td>
<td>1-6</td>
<td></td>
</tr>
<tr>
<td>BSC 398 Undergraduate Research</td>
<td>1-4</td>
<td></td>
</tr>
<tr>
<td>BSC 400 Vertebrate Funct Morphol</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>BSC 425 Human Physiology Lab</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>BSC 428 Biology Of Fishes</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>BSC 432 Pathogenic Microbiol Lab</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>BSC 434 Plant Systematics</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>BSC 439 Bch/Molecular Biology Lab</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>BSC 442 Integrated Genomics</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>BSC 460 Human Developmental Biology</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>BSC 464 Biology Of Algae</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

BSC 469 Histology Of Vertebrates 4

BSC 472 Mycology 4

BSC 475 General Entomology 4

BSC 476 Aquatic Insects 4

BSC 490 Stream Ecology 4

MS 306 Marine Biology 4

MS 321 2

MS 408 Marine Invertebrate Zoology 4

MS 419 Marine Ecology 4

MS 452 Marine Vertebrate Zoology 4

MS 453 Marine Botany 4

Upper-level Residency

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

Ancillary Courses

Grades in ancillary courses are not computed into the major GPA. The major in biology requires the successful completion of the following courses outside the major:

CH 101 or General Chemistry 4

CH 117 Honors General Chemistry 4

CH 102 or General Chemistry 4

CH 118 Honors General Chemistry 4

CH 231 Elem Organic Chemistry I 3

CH 232 Elem Organic Chem II & CH 237 and Elem Organic Chem Lab 5

MATH 125 or Calculus I 4

MATH 145 Honors Calculus I 4

Select one of the following: Hours

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PH 101</td>
<td>General Physics I</td>
<td>4</td>
</tr>
<tr>
<td>PH 105</td>
<td>General Physics W/Calc I</td>
<td></td>
</tr>
<tr>
<td>PH 125</td>
<td>Honors Gen Ph W/Calculus</td>
<td></td>
</tr>
</tbody>
</table>

Select one of the following: Hours

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PH 102</td>
<td>General Physics II</td>
<td>4</td>
</tr>
<tr>
<td>PH 106</td>
<td>Generl Physics W/Calc II</td>
<td></td>
</tr>
<tr>
<td>PH 126</td>
<td>Honors Gen Ph W/Calculus</td>
<td></td>
</tr>
</tbody>
</table>

Required Minor

The biology major does not require a minor.

Additional Major Requirements

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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSC 391</td>
<td>Tutorial In Biol Science</td>
<td>1-2</td>
</tr>
<tr>
<td>BSC 393</td>
<td>Biology Outreach</td>
<td>2</td>
</tr>
<tr>
<td>BSC 396</td>
<td>Resident Study</td>
<td>1-6</td>
</tr>
<tr>
<td>BSC 398</td>
<td>Undergraduate Research</td>
<td>1-4</td>
</tr>
<tr>
<td>BSC 399</td>
<td>Presentation Of UG Research</td>
<td>2</td>
</tr>
<tr>
<td>BSC 403</td>
<td>Intro To Bsc Instruction</td>
<td>2</td>
</tr>
<tr>
<td>BSC 404</td>
<td>Honors Intro To Bsc Instruction</td>
<td>2</td>
</tr>
<tr>
<td>BSC 407</td>
<td>Honors Seminar In Bsc</td>
<td>1</td>
</tr>
</tbody>
</table>

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 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 Biology II Laboratory, BSC 118 Honors General Biology I or BSC 120 Honors Gen Biology II) may be applied to degree requirements.
Students are responsible for ensuring that they have met all University, College, major and minor requirements. However, each student must meet with an adviser in the major department for academic planning and to be approved for registration each semester. College advisers are also available for additional assistance with minor, College, and University requirements.

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

Special Opportunities
The Department of Biological Sciences offers an abundance of special opportunities for students, including an honors program, a scholars program and a number of special areas of concentration.

Honors Program
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 cumulative grade point average, as well as in BSC courses. Admission into the program requires the approval of the Honors Program Committee and acceptance of the student by primary advisers and co-advisers. Requirements for the program include: four to eight hours of BSC 390 Honors Thesis Research, an acceptable honors thesis, attendance in BSC 407 Honors Seminar In Bsc, completion of the advanced portion of the Graduate Record Examination, and maintenance of at least a 3.4 GPA in BSC courses and a 3.4 or higher cumulative GPA. Additional details are available in the office of the Department of Biological Sciences.

Scholars Program
The Department of Biological Sciences also participates in the University Scholars Program, which allows 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 University Scholars Program, visit graduate.ua.edu or consult The University of Alabama graduate catalog.

Optional Major Concentrations
Students who wish to enhance their knowledge in a particular area of study within Biological Sciences may elect to organize their coursework around the three concentrations listed below. Though not required, these concentrations allow the student to develop an area of specialization within the major.

Molecular/Biotechnology Biology Concentration
Students who are pursuing a major in biology and are interested in specialized biology can choose a sequence of courses in the molecular/biotechnology concentration. These students should choose the first two courses, BSC 439 Bch/Molecular Biology Lab and BSC 451 Molecular Biology, and other biology electives from the following courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSC 439</td>
<td>3</td>
</tr>
<tr>
<td>BSC 451</td>
<td>3</td>
</tr>
<tr>
<td>BSC 310</td>
<td>3</td>
</tr>
<tr>
<td>BSC 311</td>
<td>3</td>
</tr>
<tr>
<td>BSC 312</td>
<td>2</td>
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<tr>
<td>BSC 313</td>
<td>3</td>
</tr>
<tr>
<td>BSC 435</td>
<td>4</td>
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<tr>
<td>BSC 441</td>
<td>3</td>
</tr>
<tr>
<td>BSC 442</td>
<td>4</td>
</tr>
<tr>
<td>BSC 444</td>
<td>3</td>
</tr>
</tbody>
</table>

Ecology and Systematics Concentration
Students who are pursuing a major in biology and are interested in specialized biology can choose a sequence of courses in the ecology and systematics concentration. These students should choose the biology electives from the following courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSC 360</td>
<td>4</td>
</tr>
<tr>
<td>BSC 373 or BSC 376</td>
<td>4</td>
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Select one of the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSC 303</td>
<td>2-4</td>
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<tr>
<td>BSC 320</td>
<td></td>
</tr>
<tr>
<td>BSC 412</td>
<td></td>
</tr>
</tbody>
</table>

Health Professions Concentration
Students who are pursuing a major in biology and are interested in a career in health professions such as medicine, dentistry, optometry pharmacy or veterinary medicine can choose a sequence of courses in the health professions concentration. The concentration also provides in-depth exposure to subject material found on the MCAT, DAT and OAT. These students should choose the biology electives from the following courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSC 310</td>
<td>3</td>
</tr>
<tr>
<td>BSC 312</td>
<td>2</td>
</tr>
<tr>
<td>BSC 400</td>
<td>4</td>
</tr>
<tr>
<td>BSC 409</td>
<td>2</td>
</tr>
<tr>
<td>BSC 410</td>
<td>2</td>
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<tr>
<td>BSC 424</td>
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<tr>
<td>BSC 425</td>
<td>2</td>
</tr>
<tr>
<td>BSC 431</td>
<td>3</td>
</tr>
<tr>
<td>BSC 432</td>
<td>3</td>
</tr>
<tr>
<td>BSC 435</td>
<td>4</td>
</tr>
<tr>
<td>BSC 449</td>
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</tr>
<tr>
<td>BSC 450</td>
<td>3</td>
</tr>
<tr>
<td>BSC 460</td>
<td>4</td>
</tr>
<tr>
<td>BSC 469</td>
<td>4</td>
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</tbody>
</table>

Microbiology Major (BMB)
Degree Requirements
Students earning the bachelor of science in microbiology (BMB) 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.

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.

Grade Point Average
A 2.0 grade point average in the major is required for completion of the degree. Please see the Grade Point Average (GPA) section of this catalog for an explanation on grade point average calculations.

Major Courses
The major in microbiology requires the successful completion of the following 47 semester hours:

Select one of the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSC 114 &amp; BSC 115</td>
<td>4</td>
</tr>
<tr>
<td>BSC 118</td>
<td></td>
</tr>
<tr>
<td>BSC 116 &amp; BSC 117</td>
<td></td>
</tr>
<tr>
<td>BSC 120</td>
<td></td>
</tr>
<tr>
<td>BSC 300</td>
<td>3</td>
</tr>
</tbody>
</table>
BSC 310     Microbiology     3
BSC 312     Microbiology Lab     2
BSC 311     Gen Bacteriol & Physiol     3
BSC 313     Gen Bacteriology Lab     3
BSC 439     Bch/Molecular Biology Lab     3
BSC 450     Fundamentals of Biochemistry     3
BSC 451     Molecular Biology     3

BSC electives 300 or 400 level*     16
Total Hours     47

*Other BSC courses must be selected from the following:

BSC 390     Honors Thesis Research     1-8
BSC 391     Tutorial In Biol Science     1-2
BSC 398     Undergraduate Research     1-4
BSC 431     Pathogenic Microbiology     3
BSC 432     Pathogenic Mibrobiol Lab     3
BSC 435     Immunology     4
BSC 444     General Virology     3
BSC 456     Microbial Ecology     3
BSC 464     Biology Of Algae     4
BSC 472     Mycology     4
BSC 497     Special Topics     1-4

*These hours must include two laboratories to be selected from:

BSC 390     Honors Thesis Research     1-8
BSC 398     Undergraduate Research     1-4
BSC 432     Pathogenic Mibrobiol Lab     3
BSC 442     Integrated Genomics     4
BSC 464     Biology Of Algae     4
BSC 472     Mycology     4

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

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:

<table>
<thead>
<tr>
<th>Hours</th>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>CH 101 or General Chemistry</td>
</tr>
<tr>
<td>4</td>
<td>CH 117 Honors General Chemistry</td>
</tr>
<tr>
<td>4</td>
<td>CH 102 or General Chemistry</td>
</tr>
<tr>
<td>4</td>
<td>CH 118 Honors General Chemistry</td>
</tr>
<tr>
<td>3</td>
<td>CH 231 Elem Organic Chemistry I</td>
</tr>
<tr>
<td>5</td>
<td>CH 232 Elem Organic Chem II &amp; CH 237 and Elem Organic Chem Lab</td>
</tr>
<tr>
<td>4</td>
<td>MATH 125 or Calculus I</td>
</tr>
<tr>
<td>4</td>
<td>MATH 145 Honors Calculus I</td>
</tr>
<tr>
<td>4</td>
<td>Select one of the following:</td>
</tr>
<tr>
<td></td>
<td>PH 101 General Physics I</td>
</tr>
<tr>
<td></td>
<td>PH 105 General Physics W/Calc I</td>
</tr>
<tr>
<td></td>
<td>PH 125 Honors Gen Ph W/Calculus</td>
</tr>
<tr>
<td>4</td>
<td>Select one of the following:</td>
</tr>
<tr>
<td></td>
<td>PH 102 General Physics II</td>
</tr>
<tr>
<td></td>
<td>PH 106 Genetl Physics W/Calc II</td>
</tr>
<tr>
<td></td>
<td>PH 126 Honors Gen Ph W/Calculus</td>
</tr>
</tbody>
</table>

Required Minor
The microbiology major does not require a minor.

Additional Major Requirements
Departmental limits on credit for enrichment courses apply to the requirements for the microbiology major and minor. A maximum of 12 hours of 100-level biology courses may be applied to degree requirements. Students are responsible for ensuring that they have met all University, College, major and minor requirements. However, each student must meet with an adviser in the major department for academic planning and to be approved for registration each semester. College advisers are also available for additional assistance with minor, College and University requirements.

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 Biology II Laboratory, BSC 118 Honors General Biology I or BSC 120 Honors Gen Biology II) may be applied to degree requirements.

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

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 cumulative grade point average, as well as in BSC courses. Admission into the program requires the approval of the Honors Program Committee and acceptance of the student by primary advisers and co-advisers. Requirements for the program include: four to eight hours of BSC 390 Honors Thesis Research BSC 390 Honors Thesis Research, an acceptable honors thesis, attendance in BSC 407 Honors Seminar In Bsc, completion of the advanced portion of the Graduate Record Examination and maintenance of at least a 3.4 GPA in BSC courses and a 3.4 cumulative GPA. Additional details are available in the office of the Department of Biological Sciences.

The Department of Biological Sciences also participates in the University Scholars Program that 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 their junior or senior year. For more information about the University Scholars Program, visit graduate.ua.edu or consult The University of Alabama graduate catalog.

Biology Minor

Admission into the Minor
Students are expected to formally declare a minor by completing the “Change of Major/Minor Application” online under the “Student” tab of myBama.

Grade Point Average
A 2.0 grade point average in the minor is required. Please see the Grade Point Average (GPA) section of this catalog for an explanation on grade point average calculations.

Minor Courses
The minor in biology requires the successful completion of the following 22 semester hours:

<table>
<thead>
<tr>
<th>Hours</th>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Select one of the following:</td>
</tr>
<tr>
<td></td>
<td>BSC 114 Principles Of Biology I</td>
</tr>
<tr>
<td></td>
<td>&amp; BSC 115 Laboratory Biology I</td>
</tr>
<tr>
<td></td>
<td>or</td>
</tr>
<tr>
<td></td>
<td>BSC 118 Honors General Biology I</td>
</tr>
<tr>
<td>4</td>
<td>Select one of the following:</td>
</tr>
<tr>
<td></td>
<td>BSC 116 Principles Biology II</td>
</tr>
<tr>
<td></td>
<td>&amp; BSC 117 and Biology II Laboratory</td>
</tr>
<tr>
<td></td>
<td>or</td>
</tr>
<tr>
<td></td>
<td>BSC 120 Honors Gen Biology II</td>
</tr>
<tr>
<td>6</td>
<td>BSC electives 300 or 400 level</td>
</tr>
<tr>
<td>8</td>
<td>BSC electives 200 level or above</td>
</tr>
</tbody>
</table>

Total Hours     22

Upper-level Residency
A minimum of 6 hours of 300- and 400-level courses in the minor must be earned on this campus.

Ancillary Courses
This minor does not require ancillary courses.

Additional Minor Requirements
No more than 4 hours earned in BSC enrichment courses may be applied to the minor. Enrichment courses are the following:
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 Intro To Bsc Instruction  2
BSC 407  Honors Seminar In Bsc  1

NOTE: BSC 409 Pre-Health Apprenticeship I and BSC 410 Pre-Health Apprenticeship II are not applicable to the minor in biology.

A maximum of 12 hours of 100-level biology courses (BSC 108, BSC 109, BSC 114:115, BSC 116:117, BSC 118 or BSC 120) may be applied to degree requirements.

Students are responsible for ensuring that they have met all University, College, major and minor requirements. However, each student must meet with an adviser in the major department for academic planning and to be cleared for registration each semester. College advisers are also available for additional assistance with minor, College and University requirements.

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

Microbiology Minor
Admission into the Minor
Students are expected to formally declare a minor by completing the Change of Major/Minor Application online under the Student tab of myBama.

Grade Point Average
A 2.0 grade point average in the minor is required. Please see the Grade Point Average (GPA) section of this catalog for an explanation on grade point average calculations.

Minor Courses
The minor in microbiology requires the successful completion of the following 22 semester hours:

<table>
<thead>
<tr>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSC 300  Cell Biology</td>
</tr>
<tr>
<td>BSC 310  Microbiology</td>
</tr>
<tr>
<td>BSC 311  Gen Bacteriol &amp; Physiol</td>
</tr>
<tr>
<td>BSC 312  Microbiology Lab</td>
</tr>
<tr>
<td>BSC 313  Gen Bacteriology Lab</td>
</tr>
<tr>
<td>BSC 450  Fundamentals of Biochemistry</td>
</tr>
<tr>
<td>BSC 451  Molecular Biology</td>
</tr>
<tr>
<td>Total Hours</td>
</tr>
</tbody>
</table>

Upper-level Residency
A minimum of six hours of 300- and 400-level courses in the minor must be earned on this campus.

Ancillary Courses
This minor does not specify ancillary courses, but prerequisites for required courses include the following (or permission of the instructor):

<table>
<thead>
<tr>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select one of the following:</td>
</tr>
<tr>
<td>BSC 114  Principles Of Biology I  and Laboratory Biology I  or  BSC 118  Honors General Biology I</td>
</tr>
<tr>
<td>Select one of the following:</td>
</tr>
<tr>
<td>BSC 116  Principles Biology II  and Biology II Laboratory  or  BSC 120  Honors Gen Biology II</td>
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<tr>
<td>CH 232  Elem Organic Chem II (or permission of the instructor)</td>
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<td>Total Hours</td>
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Additional Minor Requirements
Departmental limits on credit for enrichment courses apply to the requirements for the microbiology major and minor. Students are not permitted to count the same required minor courses toward completion of a major or second minor. Students may count required ancillary courses toward other requirements. 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 Biology II Laboratory, BSC 118 Honors General Biology I or BSC 120 Honors General Biology II II) may be applied to degree requirements. Students are responsible for ensuring that they have met all University, College, major and minor requirements. However, each student must meet with an adviser in the major department for academic planning and to be approved for registration each semester. College advisers are also available for additional assistance with minor, college and University requirements.

Faculty
Chair and professor
O’Donnell, Janis

Professors
Caldwell, Guy
Caldwell, Kimberly
Findlay, Robert
Francko, David A.
Huryn, Alexander
Lopez-Bautista, Juan
Olson, Julie
Pinkert, Carl
Powell, Martha J.
Secor, Stephen
Sobecky, Patricia
Stephenson, Edwin C.

Associate professors
Benstead, Jon
Cherry, Julia
Clark, John
Duffy, Carol
Earley, Ryan
Harris, Phillip
Johnson, Margaret
Marcus, Stevan
Mortazavi, Behzad
Ramonell, Katrina
Rasco, Jane
Starr, Greg
Staudhammer, Christina
Yoder, John

Assistant professors
Atkinson, Carla
Fierst, Jana
Gray, Rosianna
Hatoum-Aslan, Asma
Howeth, Jennifer
Jenny, Matthew J.
Lozier, Jeff
Pienaar, Jason
Reed, Laura
Courses

BSC 108. Intro Biology Non Maj I. 4 sem. hrs.
Lecture and laboratory. Not open to biology majors or minors, pre-health professions students, or students with credit for BSC 114:115 and BSC 116:117 (or the honors equivalents, BSC 118 and BSC 120). Survey of the basic principles of cellular biology, genetics, plant and animal diversity, and evolution. Usually offered fall, spring, and summer. BSC 108 and BSC 109 may be taken in either order.

BSC 109. Intro Biology Non Maj II. 4 sem. hrs.
Lecture and laboratory. Not open to biology majors or minors, or to pre-health professions students. Study of the physiology of living organisms with emphasis on the physiology of humans. Includes an overview of general ecology and animal behavior. Usually offered fall, spring and summer. BSC 108 and BSC 109 may be taken in either order.

For biology majors, biology minors and pre-health professions students. Study of general biological principles, including the chemical basis of life; cellular biology, including cell structure and metabolism, genetics and evolution; and a survey of simple organisms, including viruses, bacteria, protista and fungi. Offered fall, spring and summer. NOTE: A student must take both BSC 114 and BSC 115 in order to use either one of the courses to satisfy a portion of the natural science (N) requirement of the University Core Curriculum.

BSC 115. Laboratory Biology I. 1 sem. hr.
Prerequisite(s): BSC 114
Prerequisite(s) with concurrency: BSC 114

For biology majors, biology minors, and pre-health professions students. Study of the structure, function, and ecology of organisms, including bryophytes, vascular plants, invertebrate animals, and vertebrate animals. Offered fall, spring, and summer. NOTE: A student must take both BSC 116 and BSC 117 in order to use either one of the courses to satisfy a portion of the natural science (N) requirement of the University Core Curriculum.

BSC 117. Biology II Laboratory. 1 sem. hr.
Prerequisite(s) with concurrency: BSC 116

BSC 118. Honors General Biology I. 4 sem. hrs.
Lecture, discussion period, and laboratory. Thorough study of general biological principles, including the chemical basis of life, cellular biology, genetics, evolution, and a survey of prokaryotic organisms.
Prerequisite(s): Honors attribute or ACT score of 28 or above

BSC 120. Honors Gen Biology II. 4 sem. hrs.
Lecture, discussion period, and laboratory. Thorough study of the structure, function, physiology, and ecology of organisms, including higher and lower plants and vertebrates and invertebrate animals.
Prerequisite(s): BSC 114 and BSC 115 or BSC 118

Lecture, laboratory, and laboratory lecture. Integrated survey of human anatomy and physiology that includes cellular aspects; tissues and skin; the skeletal, muscular, nervous and endocrine systems; and the special senses of sight, hearing, taste, and smell.
Prerequisite(s): BSC 108 or BSC 109 or BSC 118 or BSC 120 or BSC 114 and BSC 115; or BSC 116 and BSC 117; or CH 102 or CH 105 or CH 118

BSC 216. Human Anatomy & Physiology II. 4 sem. hrs.
Lecture, laboratory, and laboratory lecture. Integrated survey of human anatomy and physiology that includes the respiratory, circulatory, digestive, urinary, and reproductive systems.
Prerequisite(s): BSC 215

BSC 220. Biol Evol. 3 sem. hrs.
An introductory course on the evidence for evolution, mechanisms of evolutionary change, natural and sexual speciation, and common misconceptions about evolution.

BSC 242. Microbiology And Man. 4 sem. hrs.
For students majoring in nursing, education, and human environmental sciences.
Lecture and laboratory. Introduction to microbiology with an emphasis on the relationships between man and protozoa, bacteria, viruses, and fungi. NOTE: Credit will not be granted for both BSC 242 and BSC 310
Prerequisite(s): CH 101 or CH 104 or CH 117; and CH 102 or CH 105 or CH 118; and BSC 108 or BSC 109 or BSC 114 or BSC 116 or BSC 215 or BSC 216

BSC 300. Cell Biology. 3 sem. hrs.
The course is designed to provide an understanding of the molecular basis of cell function. Topics include metabolism, gene control, cell membranes, and cell-to-cell signaling.
Prerequisite(s): BSC 114 or BSC 118; and CH 102 or CH 118

BSC 303. Field Zoology. 3 sem. hrs.
A field-based course with lecture and lab combined. A survey of the taxonomy, ecology, and identification of local biota. Offered irregularly.
Prerequisite(s): BSC 114; and BSC 115 or BSC 118; and BSC 116; and BSC 117 or BSC 120

BSC 310. Microbiology. 3 sem. hrs.
Lecture. Survey course on microorganisms, including protozoa, bacteria, viruses, fungi, and algae. Credit will not be granted for both BSC 310 and BSC 242.
Prerequisite(s): BSC 114; and BSC 115 or BSC 118; and BSC 116; and BSC 117 or BSC 120
Prerequisite(s) with concurrency: CH 231

BSC 311. Gen Bacteriol & Physiol. 3 sem. hrs.
Fundamental course in bacteriology with emphasis on bacterial morphology, physiology, nutrition, and genetics.
Prerequisite(s): BSC 310 and CH 232

BSC 312. Microbiology Lab. 2 sem. hrs.
General microbiology laboratory to accompany BSC 310.
Prerequisite(s): BSC 310
Prerequisite(s) with concurrency: BSC 310

BSC 313. Gen Bacteriology Lab. 3 sem. hrs.
Lecture and laboratory. Course presents methods for the isolation, microscopic observation, enumeration, and determination of the biochemical characteristics of bacteria.
Prerequisite(s): BSC 312
Prerequisite(s) with concurrency: BSC 311

BSC 314. Dendrology. 3 sem. hrs.
This class will be a combination of lectures, field trips, and some inside laboratory plant identification exercises. The majority of the class will be conducted in natural areas surrounding Tuscaloosa. Most class time is dedicated to lab- and field-based activities.
Prerequisite(s): BSC 114 and BSC 115 or BSC 118 and BSC 116 and BSC 117 or BSC 120 or permission of the instructor.

BSC 315. Genetics. 3 sem. hrs.
Study of transmission and function of genes, gene organization, regulation of prokaryotic and eukaryotic genes, and applications of genetics.
Prerequisite(s): BSC 114 or BSC 118; and CH 101 or CH 117; and CH 102 or CH 118

BSC 320. Freshwater Studies. 4 sem. hrs.
Lecture and laboratory. Introduction to freshwater natural history and ecology with specific emphasis on the common freshwater habitats of Alabama.
Prerequisite(s): BSC 114; and BSC 115 or BSC 118; and BSC 116; and BSC 117 or BSC 120

BSC 325. Tropical Plant Diversity. 4 sem. hrs.
The purpose of this course is to familiarize students with the relevant aspects of tropical ecosystems and tropical plants.
Prerequisite(s): BSC 114 or BSC 118; and BSC 115; and BSC 116 or BSC 120; and BSC 117

Introduces students to basic principles of natural resources conservation, including fundamental concepts in natural resource conservation and management. Examines humanity’s past and present impacts on world environments; the influence of culture and the wants, needs, and desires of human beings will be integrated into the material. Discusses conservation of natural resources, including soil, water, air, forests, rangelands, energy, wildlife and fisheries, based on scientific principles.
Prerequisite(s): (BSC 114 and BSC 115 or BSC 118) OR (BSC 116 and BSC 117 or BSC 120)

BSC 360. Plant Biology. 4 sem. hrs.
Lecture and laboratory. Introduction to the biology of embryophytes with emphasis on their development, evolution, and ecology.
Prerequisite(s): BSC 114; and BSC 115 or BSC 118; and BSC 116; and BSC 117 or BSC 120

BSC 373. Vertebrate Zoology. 4 sem. hrs.
Lecture and laboratory. Introductory course in the study of vertebrate zoology. Subjects included are principles of systematics and nomenclature, a survey of vertebrate taxa, the species concept, analysis of taxonomic characters, and an introduction to zoogeography and behavior.
Prerequisite(s): BSC 114; and BSC 115 or BSC 118; and BSC 116; and BSC 117 or BSC 120

BSC 376. Invertebrate Zoology. 4 sem. hrs.
Lecture and laboratory. The classification, morphology, evolution, and ecology of invertebrate animals.
Prerequisite(s): BSC 114; and BSC 115 or BSC 118; and BSC 116; and BSC 117 or BSC 120
BSC 380. Introduction to probability and statistics for biologists. 3 sem. hrs.
This course will provide an introduction to probability and statistical methods that are commonly used in the biological sciences. Practical, real-world examples from biology, ecology, and natural resources management will be used throughout the course. This course is aimed at 300-level students who intend to work with biological data, or anyone interested in statistics. Computing proficiency is required for a passing grade in this course.
Prerequisite(s): MATH 112 or MATH 115 or MATH 125 or MATH 145 and CS 102.

BSC 385. Ecology and Evolution. 3 sem. hrs.
This course introduces the student to two fundamental disciplines in biology – ecology and evolution. We introduce the student to the processes common to both disciplines and show how these have shaped the diversity and organization of life on this planet.
Prerequisite(s): MATH 112 or MATH 115 or MATH 121 or MATH 125 or MATH 145; and BSC 114; and BSC 115 or BSC 118; and BSC 116 or BSC 120.

BSC 386. General Ecology Lab. 2 sem. hrs.
Offered irregularly.
Prerequisite(s): BSC 385
Prerequisite(s) with concurrency: BSC 385.

BSC 390. Honors Thesis Research. 1-8 sem. hr.
Individual research conducted under the direction of an advisor and reported in an acceptable thesis. May be repeated over two to four semesters for a maximum 8 hours.
Prerequisite(s): BSC 315 and BSC 300 and BSC 385.

BSC 391. Tutorial In Biol Science. 1-2 sem. hr.
Survey of the literature relating to a topic approved by the supervising faculty member; not to include laboratory or field research. A formal paper and/or examination is required. May be taken for one credit hour in each of two consecutive semesters, or for one or two credit hours in any one semester. Offered according to demand.
Prerequisite(s): BSC 114; and BSC 115 or BSC 118; and BSC 116; and BSC 117 or BSC 120.

BSC 393. Biology Outreach. 2 sem. hrs.
Outreach course that includes survey of the literature relating to a topic approved by instructor. Design of active learning projects to emphasize a basic biological concept and teaching basic science concepts to elementary students. A maximum of 4 hours credit may be applied to the requirements for the biology or microbiology major.
Prerequisite(s): BSC 114; and BSC 115 or BSC 118; and BSC 116; and BSC 117 or BSC 120.

BSC 396. Resident Study. 1-6 sem. hr.
Prerequisite: Written approval from the department office prior to registration. Credit awarded is determined by the extent of the student’s participation but may not exceed 6 hours.
Prerequisite(s): BSC 114; and BSC 115 or BSC 118; and BSC 116; and BSC 117 or BSC 120.

BSC 398. Undergraduate Research. 1-4 sem. hr.
Independent research or research participation. A maximum of 4 hours credit for BSC 398 may be applied to the requirements of the biology and microbiology majors; an additional 4 hours may be taken as elective credit and applied to the 120-hour requirement.
Prerequisite(s): BSC 114; and BSC 115 or BSC 118; and BSC 116; and BSC 117 or BSC 120.

BSC 399. Presentation of UG Research. 2 sem. hrs.
Exploration of the process of presenting research results in different written formats including: abstract, poster, and full journal article. How the needs for clear presentation and response to peer review can inform the experimental process will also be covered.
Prerequisite(s): BSC 398.

BSC 400. Vertebrate Funct Morphol. 4 sem. hrs.
Recommended for pre-health professions students. Lecture and laboratory. The comparative anatomy of the vertebrates with emphasis on functional features of several vertebrate species. Laboratory work deals mainly with identifying anatomical features of several vertebrate species.
Prerequisite(s): BSC 114 and BSC 115; or BSC 118; and BSC 116 and BSC 117; or BSC 120; and BSC 300.

BSC 403. Intro To Bsc Instruction. 2 sem. hrs.
Prerequisite(s): BSC 114:115 or BSC 118, BSC 116:117 or BSC 120, and junior or senior standing, formal application, and a satisfactory interview.
Prerequisite(s): BSC 114 and BSC 115; or BSC 118; BSC 116 and BSC 117; or BSC 120.

BSC 404. Honors Intro To Bsc Instruction. 2 sem. hrs.
Prerequisites: BSC 114:115 or BSC 118, BSC 116:117 or BSC 120, and junior or senior standing. Honors attribute, formal application, and a satisfactory interview.
Prerequisite(s): BSC 114 and BSC 115; or BSC 118; and BSC 116 and BSC 117; or BSC 120.

BSC 407. Honors Seminar In Bsc. 1 sem. hr.
Seminar and discussion. In the first semester, students present seminars based on the current literature. In the second semester, students present seminars derived from their honors theses. A maximum of 2 hours of credit for BSC 407 may be applied to the requirements of the biology or microbiology major. Offered according to demand.

BSC 409. Pre-Health Apprenticeship I. 2 sem. hrs.
This course provides a one semester apprenticeship at a local health care facility and is intended for all pre-health professional students. This course also has a service learning component. It does not count as applicable hours for the biology major or minor.

BSC 410. Pre-Health Apprenticeship II. 2 sem. hrs.
This course provides a one semester apprenticeship at a local health care facility and is intended for all pre-health professional students. This course also has a service learning component. It does not count as applicable hours for the biology major or minor.

BSC 411. Limnology. 3 sem. hrs.
Study of freshwater environments and the organisms that live in lakes, ponds, and streams. May be taken with BSC 413 or separately.
Prerequisite(s): BSC 114; and BSC 115 or BSC 118; and BSC 116; and BSC 117 or BSC 120.

BSC 415. Wetland Ecology. 3 sem. hrs.
An in-depth analysis of wetland ecology emphasizing the biology and ecology of vascular plants, including plant adaptations to anaerobic soils, reproductive adaptations, habitat and plant zonation, and the role of plants in ecosystem function. Offered in alternate years.
Prerequisite(s): BSC 385.

BSC 417. Environmental Modeling. 3 sem. hrs.
An integrated study of quantitative principles and computer-based solution techniques important for understanding environmental systems and for environmental problem solving.
Prerequisite(s): MATH 125 and CH 101 or CH 117; and CH 102 or CH 118 and BSC 385.

BSC 420. Principles Of Systematics. 4 sem. hrs.
Introduction to the principles, methods, and applications of systematics to analysis of morphological and molecular data. Includes introduction to biological classifications and nomenclature.
Prerequisite(s): BSC 360 or BSC 373 or BSC 376 or BSC 483.

BSC 421. Personalized and Genetic Medicine. 3 sem. hrs.
This course will examine biological techniques that are advancing medical research and care. Topics include personalized medicine, direct-to-consumer genetic testing, predictive medicine, pharmacogenomics, and preimplantation genetic diagnosis. It will also explore concomitant ethical, legal, and societal ramifications related to many of these discoveries, such as ownership of biological material, informed consent for human experimentation, the burden of knowledge regarding genetic information, eugenics, and the Genetic Information Non-Discrimination Act.
Prerequisite(s): BSC 300 and BSC 315.

BSC 422. Biology of Cancer. 3 sem. hrs.
This course is an introduction to the biological principals that explain the origins, development, pathology, and treatment of cancer. Students will work in teams assigned to particular types of cancer and will investigate what is known on various topics as related to that type of cancer.
Prerequisite(s): BSC 300 minimum grade of C- and BSC 315 minimum grade of C-.

BSC 424. Human Physiology. 3 sem. hrs.
Topics covered are the digestive, nervous, reproductive, immune, muscular, blood, cardiovascular, respiratory, urinary, and body-fluid systems. May be taken with BSC 425 or separately.
Prerequisite(s): BSC 300.

BSC 425. Human Physiology Lab. 2 sem. hrs.
Hands-on experience for understanding the principles and mechanisms of physiological processes of the human body. Major emphases on organ system performance, whole-body metabolism, and energetics.
Prerequisite(s): BSC 424
Prerequisite(s) with concurrency: BSC 424.

BSC 428. Biology Of Fishes. 4 sem. hrs.
Lecture and laboratory. Survey of the structure, function, ecology, and classification of fishes. Offered in alternate years.
Prerequisite(s): BSC 385.
BSC 431. Pathogenic Microbiology. 3 sem. hrs.
Study of microorganisms related to health and disease with emphasis on molecular mechanism of pathogenesis. Offered in alternate years.
Prerequisite(s): BSC 310.

BSC 432. Pathogenic Microbiol Lab. 3 sem. hrs.
Practical experience in the isolation, characterization, and identification of pathogenic microorganisms. Offered in alternate years.
Prerequisite(s): BSC 312
Prerequisite(s) with concurrency: BSC 431.

BSC 434. Plant Systematics. 4 sem. hrs.
Lecture and laboratory. Characteristics and distribution of the major families of vascular plants as well as practice in the collection and identification of flowering plants. One weekend field trip required. Offered in alternate years.
Prerequisite(s): BSC 360.

BSC 435. Immunology. 4 sem. hrs.
Thorough exploration of various aspects of modern immunology at the molecular and cellular levels.
Prerequisite(s): BSC 310.

BSC 436. Immunology Laboratory. 3 sem. hrs.
Practical experience in modern immunological techniques. Offered in alternate years.
Prerequisite(s): BSC 435
Prerequisite(s) with concurrency: BSC 435.

BSC 439. Bch/Molecular Biology Lab. 3 sem. hrs.
Students participate in the generation of new knowledge, thus the experiments vary. Techniques taught include agarose gel electrophoresis, cycle sequencing, sequence analysis, plasmid purification, restriction endonuclease digestion, gel purification of DNA, ligation, transformation, primer design, PCR, gene knockouts, protein fusions, and enzyme assays.
Prerequisite(s): BSC 450.

BSC 441. Developmental Biology. 3 sem. hrs.
The course provides basic information about events in developing animal systems, emphasizing cellular, molecular, and genetic research approaches to the study of development.
Prerequisite(s): BSC 300 and BSC 315.

BSC 442. Integrated Genomics. 4 sem. hrs.
An advanced discovery-based laboratory course designed to introduce the process of gene discovery and integrate modern genomics techniques and bioinformatic database usage.
Prerequisite(s): BSC 300 and BSC 315
Prerequisite(s) with concurrency: BSC 315.

BSC 444. General Virology. 3 sem. hrs.
A survey of viruses, viral replication, and viral pathogenesis, including bacterial, animal, and plant viruses. The role of viruses in molecular biology is emphasized.
Prerequisite(s): BSC 300 or BSC 310.

BSC 448. Animal Behavior. 3 sem. hrs.
This course is designed to provide modern perspectives on the study of animal behavior, pulling from fields as diverse as evolutionary biology, ecology, neurobiology and economics. However there will be a historical undercurrent which will illustrate the roots of this truly interdisciplinary field.
Prerequisite(s): BSC 114; and BSC 115 or BSC 118; and BSC 117 or BSC 120; and BSC 365.

BSC 449. Endocrinology. 3 sem. hrs.
A detailed examination of the vertebrate endocrine system that uses a comparative approach to explore intricate relationships between the brain, endocrine glands, hormones and target organs.
Prerequisite(s): BSC 114; and BSC 115 or BSC 118; and BSC 116; and BSC 117 or BSC 120; and BSC 300.

BSC 450. Fundamentals of Biochemistry. 3 sem. hrs.
Prerequisite(s): BSC 300 minimum grade of C- and CH 232 minimum grade of C-.

BSC 451. Molecular Biology. 3 sem. hrs.
A one-semester survey of molecular biology that emphasizes gene structure, function, and regulation of expression. Offered spring semester.
Prerequisite(s): BSC 311 or BSC 315; and BSC 450; and CH 462 or.

BSC 456. Microbial Ecology. 3 sem. hrs.
Study of microorganisms in the environment, with emphasis on their roles in energy transformations, biogeochemical cycles, and biotic interactions.
Prerequisite(s): BSC 310 or BSC 385.

BSC 460. Human Developmental Biology. 4 sem. hrs.
Lecture and laboratory. Development of the human embryo and fetus, including molecular, physiological, and structural aspects of morphogenesis, and functional development. Offered in alternate years.
Prerequisite(s): BSC 114; and BSC 115 or BSC 118; and BSC 116; and BSC 117 or BSC 120; and BSC 300.

BSC 464. Biology Of Algae. 4 sem. hrs.
Lecture and laboratory. Freshwater and marine algae: their structure, development, taxonomy, and distribution.
Prerequisite(s): BSC 360 or BSC 310.

BSC 465. Prin Of Toxicology. 3 sem. hrs.
The study of adverse effects of chemicals on living organisms and methods for predicting the likelihood of such effects, including descriptive, mechanistic, and regulatory aspects.
Prerequisite(s): BSC 300 and BSC 315.

BSC 469. Histology Of Vertebrates. 4 sem. hrs.
Lecture and laboratory. Identification of tissue types and components, histogenesis and function of tissues.
Prerequisite(s): BSC 114; and BSC 115 or BSC 118; and BSC 116; and BSC 117 or BSC 120; and BSC 300.

Population genetics is the study of how evolutionary forces (genetic drift, natural selection, mutation, and gene flow) affect allele and genotype frequencies in populations. Population genetics is a field with a rich theoretical history that has allowed scientists to make predictions about these evolutionary processes. With the advent of massive amounts of genetic data in many species, it is now possible to test these predictions, and a solid foundation in theory, its expectations, and assumptions is crucial for interpreting results from genetic analyses. Students should expect to learn how evolutionary forces acting on individuals affect patterns of inheritance and ultimately drive the changes we see between species.
Prerequisite(s): BSC 315 minimum grade of C- and BSC 385 minimum grade of C- or permission of the instructor.

BSC 471. Plant Physiology. 3 sem. hrs.
A general survey for upper-level undergraduate students covering all aspects of plant physiology including plant transport, translocation of sugars in plants, plant biochemistry, plant metabolism, plant growth and development, photosynthesis, nitrogen fixation, flowering and plant hormones. The course will consist of lectures, in-class experiments, group discussions, presentations and other activities relating to course material.
Prerequisite(s): BSC 300 and BSC 360.

BSC 472. Mycology. 4 sem. hrs.
Lecture and laboratory. Introduction to the fungi and their biology, including aspects of their structure and function, taxonomy, genetics, and ecology. Offered in alternate years.
Prerequisite(s): BSC 310.

BSC 475. General Entomology. 4 sem. hrs.
Lecture and laboratory. Survey of the structure, function, classification, and habits of insects.
Prerequisite(s): BSC 385.

BSC 476. Aquatic Insects. 4 sem. hrs.
Lecture and laboratory. Survey of aquatic insects with emphasis on their identification, life histories, and ecology. Offered in alternate years.
Prerequisite(s): BSC 385.

BSC 480. Plant Ecology. 3 sem. hrs.
This course will examine the ecology of plants at different levels: individual, population and community.
Prerequisite(s): BSC 385 and BSC 360.

BSC 482. Conservation Biology. 3 sem. hrs.
A thorough examination of the principles of conservation biology.
Prerequisite(s): BSC 385.

BSC 483. Evolution. 3 sem. hrs.
Thorough investigation of evolution, including population genetics, molecular evolution, adaptation, and speciation. Offered in the spring semester.
Prerequisite(s): BSC 385 and BSC 315.

BSC 484. Aquatic Biology Seminar. 1 sem. hr.
Review and discussion of current topics in aquatic biology.
Prerequisite(s): BSC 320 and BSC 385; and BSC 412 or BSC 490.
BSC 485. Foundations in Forest Resources and Conservation. 3 sem. hrs.
This course provides an introduction to the foundational ideas of forest resources and conservation. The course includes a history of the forestry profession and a variety of perspectives to develop students' knowledge of forestry field and research methods. This course also helps students develop an understanding and appreciation of the diversity of forest resources both here in Alabama and globally. Prerequisite(s): (BSC 114 minimum grade of C- or BSC 118 minimum grade of C-) and (BSC 116 minimum grade of C- or BSC 120 minimum grade of C-) and BSC 340 minimum grade of C-.

BSC 487. Biogeography. 3 sem. hrs.
Examination of the ecological and historical factors influencing the geographic distribution of plants and animals. Offered alternate years. Prerequisite(s): BSC 385.

BSC 490. Stream Ecology. 4 sem. hrs.
Lecture and laboratory. Thorough study of the structural (physical and biological) and functional attributes (energy flow, nutrient cycling, community structure) characteristic of stream and river ecosystems. Offered in alternate years. Prerequisite(s): BSC 385.

BSC 493. Cell Cycle Regulation. 3 sem. hrs.
In-depth review and discussion of recent scientific research literature dealing with mechanisms of eukaryotic cell cycle regulation and their significance in human cancers. Provides a foundation for further studies in the cell cycle field, which impacts many areas of cell, molecular, and developmental biology. Prerequisite(s): BSC 300 minimum grade of C- and BSC 315 minimum grade of C- and BSC 450 minimum grade of C-.

BSC 497. Special Topics. 1-4 sem. hr.
A biological sciences topic not covered in other courses. The credit hours and format are determined as appropriate to the topic, and a course title is added to the schedule of classes. Offered according to demand. Prerequisite(s): BSC 114; and BSC 115 or BSC 118; and BSC 116; and BSC 117 or BSC 120.