BIOLOGICAL SCIENCES MAJOR

College of Computer, Mathematical and Natural Sciences
1322 Symons Hall
301-405-6892
estaylor@umd.edu
bsci.umd.edu

The Biological Sciences major exposes students to the modern experimental disciplines within biology and prepares them for diverse careers in health care, research, policy, teaching, and academia. Upper level courses are organized into specialization areas, aligned with the major research areas in modern biology ranging from molecular and cellular studies to ecosystem studies.

The Biological Sciences major is jointly offered by the Departments of Biology, Cell Biology & Molecular Genetics, and Entomology in the College of Computer, Mathematical, and Natural Sciences. The central Biological Sciences Program office in 1322 Symons Hall is staffed by:

- Dr. Joelle Presson, Assistant Dean. jpresson@umd.edu (jpresson@umd.edu)
- Dr. Francisca Saavedra, Assistant Director. saavedra@umd.edu
- Ms. Elaine Shaw-Taylor, Office Coordinator. estaylor@umd.edu (estaylor@umd.edu)

Departmental contacts for Biological Sciences are:

- Dr. Reid Compton, Undergraduate Director
  Biology. compton@umd.edu
- Dr. Dave Straney, Undergraduate Director Cell Biology & Molecular Genetics. straney@umd.edu
- Dr. Brett Kent, Undergraduate Director Entomology. kent@umd.edu

Biological Sciences Program Specializations

All Biological Sciences majors complete a common sequence of introductory and supporting courses referred to as the Basic Program. In addition, students must complete an Advanced Program within one of the following specialization areas:

- Cell Biology & Genetics (CEBG)
- Ecology & Evolution (ECEV)
- General Biology (GENB)
- Microbiology (MICB)
- Physiology & Neurobiology (PHNB)
- Individualized Studies (BIVS)

A complete list of specialization area requirements can be found on our website, bsci.umd.edu. Note that the Individualized Studies specialization (BIVS) requires permission of the Assistant Dean of Undergraduate Academic Programs, and involves an approved proposal to do coursework in the College and in other disciplines. Further questions about Biological Sciences can be directed to the Undergraduate Academic Program Office at 301-405-6892.

BIOLOGICAL SCIENCES AT THE UNIVERSITY OF MARYLAND AT SHADY GROVE

The Biological Sciences Program at the University of Maryland offers a degree program at Universities at Shady Grove. The Biological Sciences Program at Shady Grove offers the Advanced Program courses normally taken in the junior and senior years. More information is available at: https://www.shadygrove.umd.edu/academics/degree-programs/biological-sciences.

ADMISSION TO THE MAJOR

The Biological Sciences major is a Limited Enrollment Program. Please see the admission requirements and procedures at: lep.umd.edu.

PLACEMENT IN COURSES

Enrollment in BSCI170&171 and BSCI160&161 requires eligibility to take MATH120 or MATH140, either through direct placement by the Math Placement Exam, or completion of MATH113 or 115. Note that students who are ready to take MATH135 will have an eligibility for MATH140, and thus are eligible to enroll in BSCI160&161 and BSCI170&171.

Students who earn Advanced Placement or International Baccalaureate Placement credit which grants equivalency for BSCI170&171 and/or BSCI161&161 are encouraged not to repeat these courses at UMD, but can continue to courses for which BSCI170&171 and/or 160&161 satisfy prerequisite requirements.

PROGRAM LEARNING OUTCOMES

1. Students should have mastered the critical knowledge at each level in the curriculum that is necessary to move on to the next level in the curriculum.
2. Students should demonstrate an ability to use and apply quantitative methods, especially interpretation of graphical or tabular data; expression of physical, chemical, or biological process in mathematical form; solving equations to determine the value of physical, chemical, or biological variables.
3. Students at the upper level should demonstrate an ability to carry out key experimental techniques used in the chemical and life sciences disciplines.
4. Students at the lower level should have a basic understanding of how to express questions as a hypothesis, how to design a test of a hypothesis, and how to gather and analyze simple data.
5. Students at the upper level should be able to integrate and apply a relevant body of basic knowledge to the evaluation of existing scientific studies and to design studies to test specific hypotheses that includes design elements typically found in a specific field of the chemical and life sciences.
6. Students should effectively communicate in writing the processes of science and the results of scientific inquiry.

Advising

Information on BSCI advising can be found at: http://bsci.umd.edu/advising/.

All freshmen and new transfer students will be assigned an advisor from the College of Computer, Mathematical, and Natural Sciences Student Services advising staff. Students will be assigned to a departmental faculty advisor once a basic sequence of courses has been successfully
completed. The departmental faculty advisors are coordinated by the following persons for the indicated specialization areas. These coordinating advising offices can be contacted for making appointments with an advisor or for any other information regarding that specialization area.

| Straney | 1225 H.J. Patterson | 301-405-2766 | CEBG, GENB, MICB |
| Compton | 2227 Biology-Psychology | 301-405-6904 | ECEV, PHNB |
| Kent | 3142 Plant Sciences | 301-405-3911 | GENB |
| Presson | 1322 Symons Hall | 301-405-6892 | BIVS, Secondary Education Terrapin Teachers, Science in the Evening, Undergraduate Research Experiences |

Laboratory research, fieldwork, and internships are valuable co-curricular experiences which add value to a student’s academic experience in CMNS disciplines. We encourage students to pursue one or more of these experiences during their undergraduate studies. Please see the College website (http://cmns.umd.edu/undergraduate/research-internships) for more information about experiential learning for CMNS undergraduates.

### Requirements

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<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td><strong>Basic Program in Biological Sciences</strong></td>
<td></td>
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<tr>
<td>BSCI170 &amp; BSCI171</td>
<td>Principles of Molecular &amp; Cellular Biology and Principles of Molecular &amp; Cellular Biology Laboratory</td>
<td>4</td>
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<tr>
<td>BSCI160 &amp; BSCI161</td>
<td>Principles of Ecology and Evolution and Principles of Ecology and Evolution Lab</td>
<td>4</td>
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<tr>
<td>BSCI207</td>
<td>Principles of Biology III - Organismal Biology</td>
<td>3</td>
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<tr>
<td>BSCI222</td>
<td>Principles of Genetics</td>
<td>4</td>
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<tr>
<td><strong>Mathematics Supporting Courses</strong>&lt;sup&gt;1&lt;/sup&gt;</td>
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<tr>
<td>MATH135 &amp; MATH136</td>
<td>Discrete Mathematics for Life Sciences and Calculus for Life Sciences</td>
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<td>Or</td>
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<tr>
<td>MATH140 &amp; MATH141</td>
<td>Calculus I and Calculus II</td>
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<td>Or</td>
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<tr>
<td>MATH140 &amp; MATH135</td>
<td>Calculus I and Discrete Mathematics for Life Sciences</td>
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<tr>
<td><strong>Other Supporting Courses</strong></td>
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<tr>
<td>CHEM131 &amp; CHEM132</td>
<td>Chemistry I - Fundamentals of General Chemistry and General Chemistry I Laboratory</td>
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<tr>
<td>CHEM231 &amp; CHEM232</td>
<td>Organic Chemistry I and Organic Chemistry Laboratory I</td>
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**Other Program in Specialization Area**

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<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CHEM241 &amp; CHEM242</td>
<td>Organic Chemistry II and Organic Chemistry Laboratory II</td>
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<tr>
<td>CHEM271 &amp; CHEM272</td>
<td>General Chemistry and Energetics and General Bioanalytical Chemistry Laboratory</td>
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<tr>
<td>PHYS131 or PHYS141</td>
<td>Fundamentals of Physics for Life Sciences I or Principles of Physics</td>
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<tr>
<td>PHYS132 or PHYS142</td>
<td>Fundamentals of Physics for Life Sciences II or Principles of Physics</td>
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**Electives**

1. MATH140 and MATH141 taken together will fulfill the Mathematics Supporting Courses requirement; however, MATH135 and MATH136 were designed specifically for Biological Sciences majors. Students who enter the Biological Sciences major after satisfactorily completing MATH140 should take MATH135 instead of MATH141.

### Other Requirements for the Biological Sciences Major

Students receiving a degree in the Biological Sciences from the University of Maryland must earn at least 120 credits with a cumulative minimum GPA of 2.000 in all courses being counted toward the degree as well as in all courses associated with the major. Additionally, all Biological Sciences major courses must have a grade of "C-" or better.

### Opportunities

#### Internships

See http://cmns.umd.edu/undergraduate/research-internships.

#### Honors Program

Outstanding students are encouraged to apply to departmental Honors Programs. Through the Honors Programs students will become actively involved in the ongoing scientific research at the university. Information about these honors programs may be obtained from the Undergraduate Academic Programs Office, 1322 Symons Hall, 301-405-6892.

#### Student Societies and Professional Organizations

Biological Sciences student representatives serve on the CMNS Student Advisory Board. For more information see http://cmns.umd.edu/sab.

### ACADEMIC PROGRAMS AND DEPARTMENTAL FACILITIES

In addition to offering high quality undergraduate specializations in the Biological Sciences, the BSCI program participates in the collaborative program in secondary teaching, Terrapin Teachers, terrapinteachers.umd.edu. This program allows students to develop their expertise at communicating science to diverse audiences and provides a path toward certification to teach secondary school science or math.
Four Year Plan

Click here (https://cmns.umd.edu/undergraduate/advising-academic-planning/academic-planning/four-year-plans/four-year-plans-gened) for roadmaps for four-year plans in the College of Computer, Mathematical, and Natural Sciences.

Additional information on developing a four-year academic plan can be found on the following pages:

- 4yearplans.umd.edu
- the Student Academic Success-Degree Completion Policy (https://academiccatalog.umd.edu/undergraduate/registration-academic-requirements-regulations/academic-advising) section of this catalog