# B. S. BIOLOGICAL SCIENCES 2019-2020
## PRE-PHARMACY EMPHASIS

### FRESHMAN YEAR

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 1010 Frontiers in Biol. I ..................</td>
<td>BIOL 1040 General Biology II¹ ..................</td>
</tr>
<tr>
<td>BIOL 1030 General Biology I¹ ..................</td>
<td>BIOL 1060 General Biology Lab II ..................</td>
</tr>
<tr>
<td>BIOL 1050 General Biology Lab I ..................</td>
<td>CH 1020 General Chemistry ..................</td>
</tr>
<tr>
<td>CH 1010 General Chemistry ..................</td>
<td>ENGL 1030 Composition and Rhetoric ..................</td>
</tr>
<tr>
<td>MATH 1060 Calculus of One Var. I ..................</td>
<td>Mathematical Sciences Requirement³ .........</td>
</tr>
<tr>
<td>Oral Communication Requirement² .........</td>
<td>14</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sophomore Year</th>
</tr>
</thead>
</table>
| CH 2230 Organic Chemistry .................. | BCHM 3050 Essential Elements of Bioch.⁶ ......
| CH 2270 Organic Chemistry Lab .................. | BIOL 3350 Evolutionary Biology ..................
| GEN 3000 Fundamental Genetics⁴ .................. | CH 2240 Organic Chemistry ..................
| Arts and Humanities (Literature) Req.² ......... | CH 2280 Organic Chemistry Lab ..................
| Organismal Diversity Requirement² ............. | Social Science Requirement⁷ ..................
| Elective .................. | Elective ..................
| 16 | 16 |

### JUNIOR YEAR

| BIOL 3150 Functional Human Anatomy .................. | BIOL 3160 Human Physiology ..................
| BIOL 4610 Cell Biology .................. | ENGL 3150 Scientific Writing and Comm.⁹ ......
| BIOL 4620 Cell Biology Laboratory .................. | PHYS 2080 General Physics II¹⁰ ..........
| PHYS 2070 General Physics I³ .................. | PHYS 2100 General Physics II Lab¹⁰ ..........
| PHYS 2090 General Physics Lab I³ .................. | Arts and Humanities (Non-Lit) Req.⁷ ..........
| PSYC 2010 Introduction to Psychology .................. | Economics Requirement¹¹ ..................

<table>
<thead>
<tr>
<th>Senior Year</th>
</tr>
</thead>
</table>
| BIOL 4930 Senior Seminar or MICR 4930 Senior Seminar .................. | MICR 3050 General Microbiology ..................
| Ecology Requirement¹² .................. | Major Requirement¹³ ..................
| Major Requirement¹³ .................. | Elective ..................
| Elective .................. | 13 |

| Total Semester Hours = 121 |

¹ Pharmacy programs require BIOL 1030/1050 and BIOL 1040/1060, or equivalent; however, BIOL 1100 and BIOL 1110 may substitute. The additional 1-2 credit hours will be subtracted from the Major Requirement credits.

² See General Education Requirements.

³ MATH 1080, STAT 2300, or other approved coursework. See advisor. Professional schools have different mathematics requirements.

⁴ GEN 3020 may be substituted.

⁵ At least one lecture and associated laboratory selected from BIOL 3010/BIOL 3011, BIOL 3020/BIOL 3060, BIOL 3030/BIOL 3070, BIOL 3040/BIOL 3080, BIOL 3200/BIOL 3201, BIOL 4060/BIOL 4070, BIOL 4250/BIOL 4260.

⁶ BCHM 3010 may be substituted.

⁷ See General Education Requirements. Six of these credit hours must also satisfy the Cross-Cultural Awareness and the Science and Technology in Society Requirements.

⁸ PHYS 1220/1240 may be substituted.

⁹ ENGL 3140 may be substituted.

¹⁰ PHYS 2210/2230 may be substituted.

¹¹ ECON 2000, ECON 2110, or ECON 2120

¹² At least one course selected from BIOL 4100, BIOL 4410, BIOL 4420, BIOL 4430, BIOL 4460, BIOL 4480, BIOL 4700, MICR 4010, or MICR 4030.

¹³ Six credit hours must be selected from BIOL or MICR courses at the 3000-level or above (except MICR 3000), ETOX 4300, ETOX 4370, WFB 4720 or WFB 4770.
### 2019/2020 B.S. BIOLOGICAL SCIENCES CURRICULUM PRE-PHARMACY EMPHASIS

<table>
<thead>
<tr>
<th>BIOL Core Requirement: (30 cr.)</th>
<th>SEM/Yr</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 1010</td>
<td>1(1,0)</td>
<td></td>
</tr>
<tr>
<td>BIOL 1030 &amp; 1050</td>
<td>3(3,0) &amp; 1(0,3)</td>
<td></td>
</tr>
<tr>
<td>BIOL 1040 &amp; 1060</td>
<td>3(3,0) &amp; 1(0,3)</td>
<td></td>
</tr>
<tr>
<td>BIOL 3350</td>
<td>3(3,0)</td>
<td></td>
</tr>
<tr>
<td>BIOL 4610</td>
<td>3(3,0)</td>
<td></td>
</tr>
<tr>
<td>BIOL 4620/4621</td>
<td>2(1,2)</td>
<td></td>
</tr>
<tr>
<td>BIOL 4930 or MICR 4930</td>
<td>2(2,0)</td>
<td></td>
</tr>
</tbody>
</table>

#### Organismal Diversity Requirement (4 cr.)
- BIOL 3010/3011, 3020/3060, 3030/3070, 3040/3080, 3200/3201, 4060/4070, or 4250/4260

#### Ecology (3 cr.)
- BIOL 4100, 4410, 4420, 4430, 4460, 4700, MICR 4010, or 4030

#### Functional Biology Requirement (4 cr.)
- BIOL 3160/3161

#### Major Requirement: (18 cr.)
- BIOL 3150/3151 4(3,3)
- CH 2240, 2280 3(3,0) & 1(0,3)
- MICR 3050/3051 4(3,3)

#### Required Science Courses (33 cr.)
- BCHM 3050 3(3,0)
- CH 1010/1011 4(3,3)
- CH 1020/1021 4(3,3)
- CH 2230, 2270 3(3,0) & 1(0,3)
- GEN 3000 3(3,0)
- MATH 1060 4(4,0)
- MATH 1080 OR 4(4,0)
- STAT 2300 3(3,0)
- PHYS 2070, 2090 3(3,0) & 1(0,2)
- PHYS 2080, 2100 3(3,0) & 1(0,2)

#### Required Non-Science Courses (24 cr.)
- ECON 2000 OR 2110 OR 2120 3(3,0)
- ENGL 1030/1031 3(3,1)
- ENGL 3150 OR 3140 3(3,0)
- Arts & Humanities – Literature 3(3,0)
- Arts & Humanities – Non-Literature 3(3,0)
- Oral Communication Requirement 3(3,0)
- Social Sciences 3(3,0)
- PSYC 2010 3(3,0)

#### Electives (16 cr.)
- ___________________________________________________________________
- ___________________________________________________________________
- ___________________________________________________________________
- ___________________________________________________________________

**Total Semester Hours = 121**

---

1. Pre-pharmacy programs require BIOL 1030/1050 and 1040/1060 or equivalent; however, BIOL 1100/1101 and 1110/1111 may substitute. The additional 1–2 credit hours will be subtracted from Major Requirement credits.

2. Eighteen credit hours must come from BIOL or MICR courses (except MICR 3000) at the 3000-level or above or from CH 2240/2280, ETOX 4300, ETOX 4370, WFB 4720, or WFB 4770. Selections must include at least three laboratory courses. Also, all applicants are encouraged, but not required, to complete experiences providing clinical exposure to inform their decision to enter pharmacy. These experiences, ideally, should be attained through participation in a Clemson course and/or independent planning. The latter would demonstrate a personal commitment to explore this career path.

3. Pharmacy schools have specific prerequisite MATH course requirements. The Pharmacy College Admission Test (PCAT) mathematics topics include basic math, algebra, probability & statistics, pre-calculus, and calculus.

4. Students may choose to take physics with calculus, PHYS 1220, 1240 & PHYS 2210, 2230 (MATH 1080 pre-req).

5. See General Education Requirements.

6. Six of these credit hours may also satisfy the Cross-Cultural Awareness (CCA) and Science and Technology in Society Requirements (STS).

★ **Note.** Entrance requirements vary by institution and should be verified individually.