

**BIOCHEMISTRY B.S. (Sample Plan of Study)**  
 (for students following requirements in the **2023-24 General Bulletin or later**)  
(123 total credit hours required for graduation)

**First Year – Fall**

<u>Course Number</u>	<u>Course Topic</u>	<u>Hours</u>
BIOC 101	Biochemistry introduction	1
BIOL 214	Biology I	3
BIOL 214L	Biology I lab	1
CHEM 105 (or CHEM 111)	Chemistry 1	3 (or 4)
CHEM 113	Chemistry lab	2
MATH 121	Calculus I	4
Academic Inquiry, Breadth, or Elective course <sup>1</sup>		3
<u>Total</u>		<u>17 (or 18)</u>

**First Year – Spring**

BIOL 215	Biology II	3
BIOL 215L	Biology II lab	1
CHEM 106 (or ENGR 145)	Chemistry II	3
MATH 122 (or MATH 124)	Calculus II	4
PHYS 121 (or PHYS 123)	Physics I: mechanics	4
Academic Inquiry, Breadth, or Elective course <sup>1</sup>		3
<u>Total</u>		<u>18</u>

**Second Year – Fall**

<u>Course Number</u>	<u>Course Topic</u>	<u>Hours</u>
CHEM 223 (or CHEM 323)	Organic chemistry I	3
CHEM 233	Organic chemistry I lab	2
PHYS 122 (or PHYS 124)	Physics II: electricity and magnetism	4
STAT 312 (or STAT312R/313)	Basic statistics	3
Breadth or Elective course <sup>1</sup>		3
<u>Total</u>		<u>15</u>

**Second Year – Spring**

CHEM 224 (or CHEM 324)	Organic chemistry II	3
CHEM 234	Organic chemistry II lab	2
ENGR 131 (or CSDS 132)	Computer programming introduction	3
Breadth or Elective course <sup>1</sup>		3
Open Elective course <sup>3</sup> (e.g. to complete a minor)		3
<u>Total</u>		<u>14</u>

### Third Year – Fall

<u>Course Number</u>	<u>Course Topic</u>	<u>Hours</u>
BIOC 307	Biochemistry I: molecules and pathways	4
BIOC Approved Technical Elective or Core Course <sup>2</sup>		3
Breadth or Elective course <sup>1</sup>		3
Open Elective course <sup>3</sup> (e.g. to complete a minor)		3
<u>Total</u>		<u>13</u>

### Third Year – Spring

BIOC 308	Biochemistry II: molecular biology	4
BIOC 391 <sup>4</sup>	Capstone Research	3
BIOC Approved Technical Elective or Core Courses <sup>2</sup>		6
Breadth or Elective course <sup>1</sup>		3
<u>Total</u>		<u>16</u>

### Fourth Year – Fall

<u>Course Number</u>	<u>Course Topic</u>	<u>Hours</u>
BIOC 373	Biochemistry Senior Seminar	3
BIOC Approved Technical Elective or Core Course <sup>2</sup>		3
Breadth or Elective course <sup>1</sup>		3
Open Elective courses <sup>3</sup> (e.g. to complete a minor)		6
<u>Total</u>		<u>15</u>

### Fourth Year – Spring

BIOC 393 <sup>5</sup>	Senior Capstone Communication	3
BIOC Approved Technical Elective or Core Course <sup>2</sup>		3
Breadth or Elective course <sup>1</sup>		3
Open Elective courses <sup>3</sup> (e.g. to complete a minor)		6
<u>Total</u>		<u>15</u>

<sup>1</sup>Please refer to the general education requirements as specified in the General Bulletin.

<sup>2</sup>Students must take 2 of the 3 Biochemistry core courses: BIOC 312, BIOC 334, and BIOC 350.

<sup>2</sup>B.S. students are required to complete 3 approved technical elective courses.

<sup>3</sup>Any course not specified for the Biochemistry major or CWRU General Education requirements.

<sup>4</sup>Students must take BIOC 391 at least one semester.

<sup>5</sup>The Honors Research concentration requires BIOC 393H in place of BIOC 393.

*Optional concentrations (Cancer Biology, Infectious Disease, Metabolism, and Computational Health Science) do not require additional courses but do require completion of 1 specific Biochemistry core course and 2 specific approved technical elective courses.*