BIOCHEMISTRY B.A. (Sample Plan of Study)

(for students following requirements in the 2023-24 General Bulletin or later)

(120 total credit hours required for graduation)

First Year – Fall

CHEM 105 (or CHEM 111) Chemistry 1 3 (or 4)	Course Number BIOC 101 BIOL 214 BIOL 214L	Course Topic Biochemistry introduction Biology I Biology I lab		Hours 1 3 1
BIOL 215 Biology II 3 BIOL 215L Biology II 1 1 1 1 1 1 1 1 1	MATH 125 (or MATH 121)	Calculus I		4
BIOL 215			<u>Total</u>	<u>15 (or 16)</u>
BIOL 215L Biology II lab 1 CHEM 106 (or ENGR 145) Chemistry II 3 3 CHEM 113 Chemistry lab 2 2 MATH 126 (or MATH 122/124) Calculus II 4 4 Academic Inquiry, Breadth, or Elective course 3 Total 16	First Year – Spring			
Second Year – Fall Course Number Course Topic Hours CHEM 223 (or CHEM 323) Organic chemistry I 3 CHEM 233 Organic chemistry I lab 2 PHYS 115 (or PHYS 121/123) Physics I: mechanics 4 STAT 201 (or STAT 312/312R/313) Basic statistics 3 Breadth or Elective course 3 Second Year – Spring CHEM 224 (or CHEM 324) Organic chemistry II 3 CHEM 234 Organic chemistry II lab 2 PHYS 116 (or PHYS 122/124) Physics II: electricity and magnetism 4 ENGR 131 (or CSDS 132) Computer programming introduction 3 Breadth or Elective course 3	BIOL 215L CHEM 106 (or ENGR 145) CHEM 113 MATH 126 (or MATH 122/124)	Biology II lab Chemistry II Chemistry lab Calculus II		1 3 2 4 3
Course NumberCourse TopicHoursCHEM 223 (or CHEM 323)Organic chemistry I3CHEM 233Organic chemistry I lab2PHYS 115 (or PHYS 121/123)Physics I: mechanics4STAT 201 (or STAT 312/312R/313)Basic statistics3Breadth or Elective course13Total15Second Year - SpringCHEM 224 (or CHEM 324)Organic chemistry II3CHEM 234Organic chemistry II lab2PHYS 116 (or PHYS 122/124)Physics II: electricity and magnetism4ENGR 131 (or CSDS 132)Computer programming introduction3Breadth or Elective course13			<u>Total</u>	<u>16</u>
CHEM 223 (or CHEM 323) Organic chemistry I 3 CHEM 233 Organic chemistry I lab 2 PHYS 115 (or PHYS 121/123) Physics I: mechanics 4 STAT 201 (or STAT 312/312R/313) Basic statistics 3 Breadth or Elective course 3 Second Year – Spring CHEM 224 (or CHEM 324) Organic chemistry II 3 CHEM 234 Organic chemistry II lab 2 PHYS 116 (or PHYS 122/124) Physics II: electricity and magnetism 4 ENGR 131 (or CSDS 132) Computer programming introduction 3 Breadth or Elective course 1 Second Year – Spring 3 CHEM 234 Organic chemistry II lab 3 CHEM 234 Organic chemistry II lab 3 CHEM 234 Organic chemistry II lab 3 CHEM 234 Organic chemistry II lab 3 CHEM 234 Organic chemistry II lab 3 CHEM 234 Organic chemistry II lab 3 CHEM 234 Organic chemistry II lab 3 CHEM 234 Organic chemistry II lab 3 CHEM 234 Organic chemistry II lab 3 CHEM 234 Organic chemistry II lab 3 CHEM 234 Organic chemistry II lab 3 CHEM 234 Organic chemistry II lab 3 CHEM 234 Organic chemistry II lab 3 CHEM 234 Organic chemistry II lab 3 CHEM 234 Organic chemistry II lab 3 CHEM 234 Organic chemistry II lab 3 CHEM 234 Organic chemistry II lab 3 CHEM 234 Organic chemistry II lab 3 CHEM 234 Organic chemistry II lab 3 CHEM 235 Organic chemistry II lab 3 CHEM 236 Organic chemistry II lab 3 CHEM 236 Organic chemistry II lab 3 CHEM 237 Organic chemistry II lab 3 CHEM 238 Organic chemistry II lab 4 CHE	Second Year – Fall			
CHEM 233 Organic chemistry I lab 2 PHYS 115 (or PHYS 121/123) Physics I: mechanics 4 STAT 201 (or STAT 312/312R/313) Basic statistics 3 Breadth or Elective course 1 3 Second Year – Spring CHEM 224 (or CHEM 324) Organic chemistry II 3 CHEM 234 Organic chemistry II lab 2 PHYS 116 (or PHYS 122/124) Physics II: electricity and magnetism 4 ENGR 131 (or CSDS 132) Computer programming introduction 3 Breadth or Elective course 1 3	<u>Course Number</u>	Course Topic		<u>Hours</u>
Second Year – Spring CHEM 224 (or CHEM 324) Organic chemistry II 3 CHEM 234 Organic chemistry II lab 2 PHYS 116 (or PHYS 122/124) Physics II: electricity and magnetism 4 ENGR 131 (or CSDS 132) Computer programming introduction 3 Breadth or Elective course ¹ 3	CHEM 233 PHYS 115 (or PHYS 121/123) STAT 201 (or STAT 312/312R/313	Organic chemistry I lab Physics I: mechanics		2 4 3
CHEM 224 (or CHEM 324) CHEM 234 Organic chemistry II Organic chemistry II lab PHYS 116 (or PHYS 122/124) Physics II: electricity and magnetism ENGR 131 (or CSDS 132) Computer programming introduction 3 Breadth or Elective course ¹ 3			<u>Total</u>	<u>15</u>
CHEM 234 Organic chemistry II lab 2 PHYS 116 (or PHYS 122/124) Physics II: electricity and magnetism 4 ENGR 131 (or CSDS 132) Computer programming introduction 3 Breadth or Elective course ¹ 3	Second Year – Spring			
	CHEM 234 PHYS 116 (or PHYS 122/124) ENGR 131 (or CSDS 132)	Organic chemistry II lab Physics II: electricity and ma	-	2 4 3
10iui 15	Breadth or Elective course.		<u>Total</u>	3 <u>15</u>

Third Year – Fall

<u>Course Number</u>	<u>Course Topic</u>	<u>Hours</u>
BIOC 307 BIOC Approved Technical Elective Breadth or Elective course ¹ Open Elective course ³ (e.g. to comp		4 3 3 3
	<u>Total</u>	<u>13</u>
Third Year – Spring		
BIOC 308 BIOC 391 ⁴ BIOC Approved Technical Elective Breadth or Elective course ¹ Open Elective course ³ (e.g. to comp		4 3 3 3 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 BIOC Approved Technical Elective or Core Course ² Breadth or Elective course ¹ Open Elective courses ³ (e.g. to complete a minor)		3 3 3 6
	<u>Total</u>	<u>15</u>
Fourth Year – Spring		
BIOC 393 ⁵ BIOC Approved Technical Elective Breadth or Elective course ¹	Senior Capstone Communication or Core Course ²	3 3 3

6

<u>15</u>

Total

Open Elective courses³ (e.g. to complete a minor)

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.

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¹Please refer to the general education requirements as specified in the General Bulletin.

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

²B.A. students are required to complete 2 approved technical elective courses.

³Any course not specified for the Biochemistry major or CWRU General Education requirements.

⁴Students must take BIOC 391 at least one semester.

⁵The Honors Research concentration requires BIOC 393H in place of BIOC 393.