

Undergraduate Major in Biochemistry Sample Curriculum

Data Science Concentration

First Year (31 total credits)

Fall

BC 192	2 cr
LIFE 102	4 cr
CHEM 111,112	5 cr
MATH 155 or 160	<u>4 cr</u>
	15 cr

Spring

LIFE 201B, 203	5 cr
CHEM 113,114	4 cr
CO 150	3 cr
MATH 255	<u>4 cr</u>
	16 cr

Sophomore Year (30 total credits)

Fall

CHEM 341	3 cr
LIFE 210	3 cr
LIFE 212	2 cr
AUCC Cat 1C and 3B-D ¹ Free	6 cr
Electives ²	<u>2 cr</u>
	16 cr

Spring

CHEM 343	3 cr
CHEM 344	2 cr
CS 152	2 cr
CS 162	2 cr
STAT 158	1 cr
AUCC Cat 3B-D ¹	<u>3 cr</u>
	13 cr

Junior Year (29 total credits)

Fall

BC 401	3 cr
BC 404	2 cr
CS 220	4 cr
STAT 315	3 cr
BZ 360	<u>3 cr</u>
	15 cr

Spring

PH 121/141	5 cr
BC 403	3 cr
DSCI 235	2 cr
AUCC Cat 2	3 cr
BC 406/475/487/495	<u>2-3 cr</u>
	15-16 cr

Senior Year (30 total credits)

Fall

BC 411	4 cr
BC 463	3 cr
BC 493	1 cr
AUCC Cat 3B-D ¹	3 cr
STAT 341	<u>3 cr</u>
	14 cr

Spring

BC 465	3 cr
BC 499A/E	3 cr
AUCC Cat 3B-D ¹	3 cr
DSCI 335	3 cr
Free Electives ²	<u>3-4 cr</u>
	15-16 cr

¹Select from the list of courses in categories 3B-3D (six credits [two courses] must come from 3B; one course each from categories 3C and 3D) in the AUCC. Only 3 of the 6 credits required for Arts and Humanities may come from intermediate (L*** 200 and L*** 201) foreign language courses.

²Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400- level). Students are encouraged to fulfill their free elective credits with research credits and additional Data Science electives.

DATA SCIENCE ELECTIVES

Course	Cr	Title	Semester	Prerequisites
DSCI 320	3	Optimization Methods in Data Sci	F	CS 163 or CS 164 and MATH 151 and MATH 255 or MATH 261 and DSCI 369 or MATH 369
DSCI 369	4	Linear Algebra for Data Science	SP	MATH 124 and MATH 126 or MATH 160
DSCI 445	3	Statistical Machine Learning	F	DSCI 369 and STAT 341
DSCI 473	2	Introduction to Geometric Data	F	DSCI 369
DSCI 475	2	Topological Data Analysis	SP	DSCI 369 or MATH 369
CS 320	3	Algorithms - Theory and Practice	F, SP	CS 165 and CS 220 and MATH 155 or MATH 160 and DSCI 369 or MATH 229 or MATH 369 (all with a minimum grade of C)
CS 425	4	Introduction to Bioinformatics Alg	F	BZ 360 or CS 320 and CS 345 (all with a minimum grade of C)
CS 435	4	Introduction to Big Data	F	CS 320 or CS 370 (all with a minimum grade of C)
CS 445	4	Introduction to Machine Learning	SP	CS 165 and CS 345 and DSCI 369 or MATH 229 or MATH 369 (all with a minimum grade of C)
MATH 151	1	Mathematical Algorithms in Matla	SP	MATH 141 or MATH 155 or MATH 160.
STAT 342	3	Statistical Data Analysis II	SP	STAT 340 or STAT 341
STAT 460	3	Applied Multivariate Analysis	SP	STAT 341 and DSCI 369 or MATH 229 or MATH 340 or MATH 369

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