

Data Science Major BS
{Chemical Data Science Track} Curriculum Sheet
As of August 13, 2024

Foundational Courses			
Course	Credits	Notes and Prerequisites	Generally Offered *
01:198:142/01:960:142 Data 101	4	Placement into 01:740:026 (Math 026)	Fall, Spring, Summer
01:960:291 Statistical Inference for Data Science OR, 01:960:212. Statistics II, OR, 01:960:384 Intermediate Statistical Analysis, OR, 33:136:385 Statistical Methods in Business	3	Prereqs for 01:960:291 01:198:142/ 01:960:142 and 01:640:115 Prereqs for 01:960:212 01:640:115 or permission of department. Prereqs for 01:960:284 One of the following courses: 960:201, 211, 285, 379, 381 or permission of department. Prereqs for 33:136:385 01:640:135, 01:960:285.	Fall, Spring
01:198:210 Data Management for Data Science (4) OR, 01:960:295 Data Wrangling and Management with R (3) OR, 04:547:221 Fundamentals of Data Curation and Management (3)	3-4	Prereqs for 01:198:210 01:198:142/01:960:142 /01:198:111 Prereqs for 01:960:295 01:198:142/01:960:142 or Level II Statistics Prereqs for 04:547:221 04:547:202 or both 01:198:142/01:960:142 and 01:960:291	198:210 -> Fall, Spring 960:295 -> Spring 547:221 -> Fall, Spring
01:640:151 Calculus I	4	01:640:112 or 115 or appropriate performance on the placement test in mathematics.	Fall, Spring, Summer
01:640:250 Introductory Linear Algebra	3	Precalculus (Math 115 or 111-112) or placement into Calculus.	Fall, Spring, Summer
04:189:220 Data in Context	3	None	Fall, Spring, Summer
Credit Total	20-21		

Chemical Data Science Track Courses			
Course	Credits	Notes and Prerequisites	Generally Offered *
01:640:152 Calculus II	4	01:640:135/151 Calculus I or placement into Calculus II	Fall, Spring, Summer

01:198:111 Introduction to Computer Science	4	01:640:115 or placement in CALC1	Fall, Spring, Summer
Choose one of the following: 01:160:161 General Chemistry 01:160:159 General Chemistry for Engineers 01:160:163 Honors General Chemistry 01:160:165 Extended General Chemistry	4 3 4 4	Prereqs for 01:160:161 01:640:111 or 115, or appropriate performance on the placement test for mathematics. Credit not given for both this course and 159, 163, or 165. Prereqs for 01:160:159 01:640:112 or 115, or equivalent. Credit not given for both these courses and 01:160:161-162, 163-164 or 165-166. Prereqs for 01:160:163 A year of high school chemistry or permission from instructor; corequisite: 01:640:151. Credit not given for both these courses and 01:160:159-160 or 161-162. Prereqs for 01:160:165 01:640:111 or 115, or appropriate performance on the placement test for mathematics. Credit not given for both this course and 159, 161, or 163.	
Choose one of the following: 01:160:162 General Chemistry 01:160:160 General Chemistry for Engineers 01:160:164 Honors General Chemistry 01:160:166 Extended General Chemistry	4 3 4 4	Prereqs for 01:160:162 A grade of "C" or higher in Chem 161; and 01:640:111 or 115, or equivalent. 162 pre- or corequisite: 01:160:171. Credit not given for both this course and 01:160, 164, or 166. Prereqs for 01:160:160 01:160:159 and 01:640:112 or 115, or equivalent. Pre- or corequisite: 01:160:171. Credit not given for both these courses and 01:160:161-162, 163-164 or 165-166. Prereqs for 01:160:164 01:160:163; pre- or corequisites: 01:640:152 and 01:160:171, or permission from instructor. Credit not given for both these courses and 01:160:159-160 or 161-162. Prereqs for 01:160:166 A grade of "C" or higher in Chem 01:160:165 or 01:160:161; Credit not given for both this course and 160, 162, or 164.	
01:160:171 Introduction to Experimentation	1	01:640:111, 115, or equivalent. Pre- or corequisite: 01:160:159, 161, or 163.	

Choose one of the following: 01:160:307 Organic Chemistry 01:160:315 Honors Organic Chemistry	4	Prereqs for 01:160:307 A grade of "C" or better in 01:160:160, 162, 164 or 166. Organic Chemistry 307 does not substitute for 01:160:209. Credit not given for both 01:160:307-308 and 305-306 or 315-316.	
	4	Prereqs for 01:160:315 01:160:160, 162, or 164. 01:160:209 does not substitute for 01:160:315. Credit not given for both 01:160:315-316 and 305-306 or 307-308.	
Choose one of the following: 01:160:308 Organic Chemistry 01:160:316 - Honors Organic Chemistry	4	Prereqs for 01:160:308 A grade of "C" or better in 01:106:307. Credit not given for both 01:160:307-308 and 305-306 or 315-316.	
	4	Prereqs for 01:160:316 01:160:315. Corequisite: 01:160:309. Credit not given for both 01:160:315-316 and 305-306 or 307-308.	
Choose at least 9 credits of the following: 01:160:251 Analytical Chemistry 01:160:309 Organic Chemistry Laboratory 01:160:348 Instrumental Analysis 01:160:351 Inorganic Chemistry 01:160:352 Inorganic Chemistry IIA (7-week course) 01:160:353 Inorganic Chemistry IIB (7-week course) Either 01:160:327 Physical Chemistry OR**	3	Prereqs for 01:160:251 01:160:171 and 160, 162, or 164.	160:251 -> Fall and Spring
	2.5	Prereqs for 01:160:309 01:160:171. 309 Corequisite: 01:160:308 or 316. Open only to students majoring in chemistry, biochemistry, chemical engineering, and molecular biology and biochemistry, or by permission of instructor.	
	3	Prereqs for 01:160:348 01:160:251.	
	3	Prereqs for 01:160:351 01:160:305, 307, or 315 and 01:640:152 or equivalent.	
	1.5	Prereqs for 01:160:352 01:160:351.	160:352 -> Spring
	1.5	Prereqs for 01:160:353 01:160:351 Recommended: 01:160:352.	160:353 -> Fall
	4	Prereqs for 01:160:327 01:160:160, 162, or 164; 01:640:251; 01:750:203-204, or 227 and 228. Credit	

01:160:341 Physical Chemistry: Biochemical Systems	3	not given for both these courses and 01:160:323-324 or 341-342. Equivalent to 01:160:323-324 but includes a recitation.	
Either 01:160:328 Physical Chemistry OR	4	Prereqs for 01:160:341 01:160:160, 162, or 164; 01:640:251; 01:750:203-204, or 227 and 228. Credit not given for both these courses and 01:160:323-324 or 327-328.	
01:160:342 Physical Chemistry: Biochemical Systems OR**	3	Prereqs for 01:160:328 01:160:160, 162, or 164; 01:640:251; 01:750:203-204, or 227 and 228. Credit not given for both these courses and 01:160:323-324 or 341-342. Equivalent to 01:160:323-324 but includes a recitation.	
01:160:438 Introduction to Computational Chemistry	3	Prereqs for 01:160:342 01:160:160, 162, or 164; 01:640:251; 01:750:203-204, or 227 and 228. Credit not given for both these courses and 01:160:323-324 or 327-328.	
Either 01:694:407 Molecular Biology and Biochemistry OR**	3	Prereqs for 01:160:438 01:160:324, 328, 342, or permission of instructor.	694:407 -> Fall
11:115:403 General Biochemistry I	4	Prereqs for 01:694:407 01:160:307 or Honors 01:160:315. Credit not given for both 01:694:407 and 01:694:301 or 11:115:301 or 11:115:403.	11:115:403 ->
		Prereqs for 11:115:403 01:160:307-308 Organic Chemistry or 315-316 Honors Organic Chemistry with grades of C or better.	This is a lecture course that is offered each Fall and Spring semester. This course is the first semester of a two-semester integrated survey of biochemistry, the second half being General Biochemistry 404. The typical sequence is 403 in the Fall and 404 in the Spring. However, both courses are offered in the off semester.
01:960:365 Introduction to Bayesian Data Analysis OR	3	Prereqs for 01:960:365 Level II Statistics and 01:640:152. {The Level II Statistics prerequisites for some courses may be fulfilled by 960:212 or 960:384 or 960:401 or 960:484 or 960:291 or the equivalent. Credit will not be given for more than one Level II Statistics course.}	960:365 Fall
01:960:463 Regression Methods	3	Prereqs for 01:960:463 Level II Statistics	960: 463 Fall, Spring, Summer

01:198:310 Data Science Capstone Project OR 01:160: TBD	1	01:198:142/01:960:142 (Data 101/Data Literacy), 01:960:291 (Statistical Inference for Data Science) and one of the following: 01:198:210 (Data Management for Data Science), 01:960:295 (Data management and wrangling with R), or 04:547:221 (SCI Data management course).	
01:160: TBD Chemical Data Science and Machine Learning Applications (under development) *** Note: Please use the CCB Special Topics Course number for now.	3		
Credit Total	59		

*Please note that the respective departments can change the semester(s) in which the course(s) are offered. Students must confirm the same with the individual departments.

** For a total of 9 credits, students cannot take both from the 'either/or' choices.

***** NOTE:**

From CCB chair 7.19.24 "Our faculty (a subset) are working on creating the course. It would initially be offered as special topics to test-run the course and then would transition through curriculum committees (internal and SAS) to officially appear on the books. Since we expect this to be an upper division/level course and the Track was just launched, we expect at least one full year (AY 24/25) to create it."