

Biochemistry & Molecular Biology Major, B.S.

Department of Chemistry

Biochemistry and molecular biology is the study of life at the molecular level. This field is both a life science and a chemical science, exploring the chemistry of living organisms and the molecular basis for the processes that occur in living cells. The Department of Chemistry provides classroom and laboratory learning opportunities and research experience across the discipline to meet the needs of students in preprofessional programs as well as of students who wish to pursue careers in the field.

Typical Program of Study:

Fall Semester

First Year

Chem 1151 General Chemistry I ^a or Chem 1161 Honors Chemistry I ^a	5 cr
Math 1296 Calculus I ^b	5 cr
Biol 1011 General Biology I	<u>5 cr</u>
	15 cr

Second Year

Chem 2521 Organic Chemistry I	4 cr
Phys 2011 General Physics I	4 cr
Chem 2222 Quantitative Analysis	3 cr
Chem 2223 Quantitative Analysis Lab	1 cr
Comp 1120 College Writing	<u>3 cr</u>
	15 cr

Third Year

Chem 4632 Physical Chemistry	4 cr
Chem 4633 Physical Chemistry Lab	1 cr
Comp 31xx Advanced Writing	3 cr
Biol 2201 Genetics	3 cr
Liberal education or minor field course	<u>4 cr</u>
	15 cr

Fourth Year

Chem 3184 Undergraduate Seminar	1 cr
Chem 4342 Biochemistry/Molecular Biology II	4 cr
Chem 4364 Molecular Biology Lab	2 cr
Chem 4434 Inorganic Chemistry	4 cr
Liberal education or minor field course	<u>4 cr</u>
	15 cr

Spring Semester

Chem 1152 General Chemistry II or Chem 1162 Honors Chemistry II	5 cr
Math 1297 Calculus II	5 cr
Biology 1012 General Biology II	<u>5 cr</u>
	15 cr

Chem 2522 Organic Chemistry II	4 cr
Phys 2012 General Physics II	4 cr
Biol 2101 Cell Biology	3 cr
Liberal education or minor field course	<u>4 cr</u>
	15 cr

Chem 4341 Biochem/Molecular Biology I	3 cr
Chem 4363 Biochemistry Lab	2 cr
Chem 4242 Instrumental Analysis	3 cr
Liberal education or minor field courses	<u>8 cr</u>
	16 cr

Chem 3184 Undergraduate Seminar	1 cr
Liberal education or minor field courses	<u>13 cr</u>
	14 cr

^aHigh school algebra and high school chemistry are required for Chem 1151 and Chem 1161.

^bFirst math course is determined by math placement exam. This schedule presupposes placement into Math 1296.

For further information:

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<http://www.d.umn.edu/chem>

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2003-2005 Catalog

Major Course Requirements	Credits	Prerequisites	Semester To Be Completed	Grade When Completed
Year 1				
Biol 1011 General Biology I	5	1 yr hs chem or 1 semester college chem		
Biol 1012 General Biology II	5	Biol 1012		
Chem 1151 General Chemistry I	5	1 yr high school chemistry; hs algebra		
Chem 1152 General Chemistry II OR	5	Chem 1151		
Chem 1161 Honors General Chemistry I	5	High school chemistry; placement		
Chem 1162 Honors General Chemistry II	5	Chem 1161		
Math 1296 Calculus I	5	Math placement		
Math 1297 Calculus II	5	Math 1296		

Year 2				
Biol 2101 Cell Biology	3	Biol 1012; 4 credits organic chemistry		
Chem 2222 Quantitative Analysis	3	Chem 1152 or 1162		
Chem 2223 Quantitative Analysis Lab	1	Concurrent registration in Chem 2222		
Chem 2521 Organic Chemistry I	4	Chem 1152 or 1162		
Chem 2522 Organic Chemistry II	4	Chem 2521		
Comp 1120 College Writing	3			
Phys 2011 General Physics I	4	Math 1290 or Math 1296		
Phys 2012 General Physics II	4	Phys 2011; Math 1297		

Year 3				
Biol 2201 Genetics	3	Biol 1012; Math 1005 or higher		
Chem 4341 Biochem & Molecular Biol I	4	Chem 2522; Math 1296; Chem 4632 rec		
Chem 4363 Biochemistry Laboratory	2	Chem 2222; concurrent reg in Chem 4341		
Chem 4242 Instrumental Analysis	3	Chem 2222; 4632 or 4642 (concurrent ok)		
Chem 4632 Physical Chemistry	4	Chem 2522; Math 1297; Phys 2012		
Chem 4633 Physical Chemistry Lab	1	Concurrent registration in Chem 4632		
Comp 31xx Advanced Writing	3	Comp 1120; 60 credits		

Year 4				
Chem 3184 Undergraduate Seminar (1st sem)	1	Biochem/MB major		
Chem 3184 Undergraduate Seminar (2nd sem)	1	Biochem/MB major		
Chem 4342 Biochem & Molecular Biol II	4	Chem 4341; Math 1296; Chem 4632 or 4642 recommended		
Chem 4364 Molecular Biology Lab	2	Concurrent reg in Chem 4342; Chem 4363		
Chem 4434 Inorganic Chemistry	4	Chem 4632 or Chem 4642		

NOTE: In addition to the above, students must complete the liberal education program and a minor to earn the B.S. degree.