

Bioinformatics and Computational Biology B.S.

Freshman		
Fall	Credits Spring	Credits
BCBIO 110	0.5 BIOL 212	3
MATH 165	4 BIOL 212L	1
ENGL 150	3 Humanities choice	3
BIOL 211	3 MATH 166	4
BIOL 211L	1 LIB 160	1
CHEM 177	4 CHEM 178	3
CHEM 177L	1	
	16.5	15
Sophomore		
Fall	Credits Spring	Credits
CHEM 231L	1 GEN 409	3
BIOL 313L	1 COM S 228	3
COM S 227	4 MATH 265 (Recommended)	4
ENGL 250	3 Social Science choice	3
CHEM 231	3 BCBIO 211	3
BIOL 313	3	
	15	16
Junior		
Fall	Credits Spring	Credits
COM S 330 or CPR E 310	3 Social Science choice	3
PHYS 221	5 Humanities choice	3
STAT 330 ***	3 COM S 311	3
Humanities Choice	3 Bioinformatics Support Elective**	3
	ENGL 309	3
	OR	
	ENGL 312 or 314	
	14	15
Senior		
Fall	Credits Spring	Credits
Elective*	3 BCBIO 402	3
Humanities choice	3 1-5 credits:	1-5
BCBIO 401	3 BCBIO 490 or 491	
COM S 363 (Recommended)	3 Social Science choice	3
STAT 430 ***	3 Elective*	3
	15	10-14
Total Credits: 116.5-120.5		

* LAS majors require a minimum of 120 credits, **including a minimum of 45 credits at the 300/400 level**. Students must also complete the LAS foreign language requirement. Students who did not complete 3 years of foreign language in high school will need to earn foreign language credit before graduating.

Students in all ISU majors must complete a three-credit course in U.S. diversity and a three-credit course in international perspectives. See list of approved courses (<http://www.registrar.iastate.edu/courses/div-ip-guide.html>). Discuss with adviser how the two courses that you select can be applied to your graduation plan.

** BCBio Support Electives
3-9 credits to be chosen from the following list:
BBMB 404 Biochemistry I (3 cr)
BBMB 405 Biochemistry II (3 cr)
BBMB 461 Molecular Biophysics (2 cr)
BIOL 328 Molecular and Cellular Biology of Human Diseases (3 cr)
BIOL 423 Developmental Biology (3 cr)
BIOL 451 Plant Evolution and Phylogeny (4 cr)
BIOL 462 Evolutionary Genetics (3 cr)
BIOL 465 Morphometric Analysis (4 cr)
BIOL 487 Microbial Ecology (3 cr)
COM S 252 Linux Operating System Essentials (3 cr)
COM S 309 Software Development Practices (3 cr)
COM S 319 Software Construction and User Interfaces (3 cr)
COM S 327 Advanced Programming Techniques (3 cr)
COM S 363 Introduction to Database Management Systems (3 cr)
COM S 425 High Performance Computing for Scientific and Engineering Applications (3 cr)
COM S 426 Introduction to Parallel Algorithms and Programming (4 cr)
GEN 340 Human Genetics (3 cr)
GEN 410 Analytical Genetics (3 cr)
MATH 207 Matrices and Linear Algebra (3 cr)
or MATH 317 Theory of Linear Algebra
MATH 265 Calculus III (4 cr)
MATH 266 Elementary Differential Equations (3 cr)
or MATH 267 Elementary Differential Equations and Laplace Transforms
MATH 304 Combinatorics (3 cr)
MATH 314 Graph Theory (3 cr)
MATH 373 Introduction to Scientific Computing (3 cr)
MICRO 402 Microbial Genetics and Genomics (3 cr)
STAT 342 Introduction to the Theory of Probability and Statistics II (3 cr)
STAT 402 Statistical Design and the Analysis of Experiments (3 cr)
STAT 407 Methods of Multivariate Analysis (3 cr)
STAT 416 Statistical Design and Analysis of Gene Expression Experiments (3 cr)
STAT 444 Bayesian Data Analysis (3 cr)
STAT 480 Statistical Computing Applications (3 cr)

*** Note : The following other STAT courses may be substituted for STAT 330 and STAT 430, with permission of the BCBio Major.
STAT 330: STAT 101, 104, 105, 201, 231, 305, or 341
STAT 430: STAT 301, 401, or 432