

**IOWA STATE UNIVERSITY**  
**UNDERGRADUATE B.S. IN BIOINFORMATICS AND COMPUTATIONAL BIOLOGY**  
**DEGREE REQUIREMENTS 2022-23 CATALOG**

**The degree requires 120.5 credits. At least 32 credits must be taken at ISU.**

(Numbers in parentheses refer to credits; unless noted, classes are offered both fall and spring)

**\*Course lists found here:** <https://bcbio.las.iastate.edu/approved-course-lists>

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**I. UNIVERSITY REQUIREMENTS:** *These apply to all ISU degree programs.*

- \_\_\_\_\_ ENGL 150 (3) Critical Thinking and Communication **Minimum C**
- \_\_\_\_\_ ENGL 250 (3) or ENGL 250H (3) Written, Oral, Visual, and Electronic Communication **Minimum C**
- \_\_\_\_\_ LIB 160 (1) Library Instruction
- \_\_\_\_\_ International Perspectives\* (3)
- \_\_\_\_\_ U. S. Diversity\* (3) *\*Certain courses also meet a College requirement for Arts and Humanities or Social Sciences (dual-count)*
- \_\_\_\_\_ Advanced English: ENGL 309 (3) Report and Proposal Writing **or** ENGL 312 (3) Biological Communication **or** ENGL 314 (3) Technical Writing **Minimum C**

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**II. COLLEGE REQUIREMENTS:**

**College of Liberal Arts and Sciences (LAS)**

- \_\_\_\_\_ 3 years of a single foreign language in high school or 4-8 credits of World Languages (students who have 2 years of a foreign language only need to complete a 102 level course in the same language)
- \_\_\_\_\_ Social Sciences\* (9 credits)
- \_\_\_\_\_ Arts and Humanities\* (12 credits)

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**III. MAJOR REQUIREMENTS:**

**Core Courses: Minimum of 38.5 credits**

- \_\_\_\_\_ GEN 110 (1) BCBio and Genetics Orientation *fall only*
- \_\_\_\_\_ GEN 313 & L (4) Principles of Genetics and Genetics Laboratory
- \_\_\_\_\_ COM S 227 (4) Introduction to Object-oriented Programming
- \_\_\_\_\_ COM S 228 (3) Introduction to Data Structures
- \_\_\_\_\_ COM S 230 (3) Discrete Computational Structures
- \_\_\_\_\_ COM S 311 (3) Design and Analysis of Algorithms
- \_\_\_\_\_ MATH 165 (4) Calculus I **and** MATH 166 (4) Calculus II
- \_\_\_\_\_ BCBIO 322 (3) Introduction to Bioinformatics and Computational Biology *fall only*
- \_\_\_\_\_ BCBIO 401 (3) Fundamentals of Bioinformatics and Computational Biology I *alternating falls, even years only*
- \_\_\_\_\_ BCBIO 406 (3) Fundamentals of Systems Biology and Network Science *alternating springs, odd years only*
- \_\_\_\_\_ BCBIO 490 Independent Study **or** BCBIO 491 Team Research Projects (1-5 credits) \*
- \_\_\_\_\_ Department Approved list: Select 3-9 Credits from list\*
- \_\_\_\_\_ *NOTE: Must have 8.0 crs of 300+ level COM S, MATH, or BCBIO taken at ISU with grade of C or higher*

**Complementary Courses: Minimum of 31 credits**

- \_\_\_\_\_ **General Biology:** BIOL 211 & 211L (4) Principles of Biology I **and** BIOL 212 & 212L (4) Principles of Biology
- \_\_\_\_\_ **Advanced Biology:** BIOL 314 (3) Molecular Cell Biology **or** BIOL 315 (3) Biological Evolution **or** GEN 409 (3) Molecular Genetics
- \_\_\_\_\_ **General Chemistry:** CHEM 163 & L (5) College Chemistry and Lab **or** CHEM 177 & L (5) General Chemistry I **and** CHEM 178 (3) General Chemistry II
- \_\_\_\_\_ **Organic Chemistry:** CHEM 231 & L (4) Elementary Organic Chemistry **or** CHEM 331 & L (4) Organic Chemistry I **and** CHEM 332 & L (4) Organic Chemistry II
- \_\_\_\_\_ **Physics:** PHYS 115 & L (5) **or** PHYS 131X & L (5) General Physics I **or** PHYS 231 & L (5) Classical Physics I
- \_\_\_\_\_ **Statistics:** STAT 330 (3) Probability and Statistics for Computer Science **and** STAT 483 (3) Empirical Methods for the Computational Sciences *fall only*

**Additional elective coursework to meet 120.5 credits. Some electives may need to be at the 300+ level to reach the 45 credits of advanced (300+) coursework required by the College of Liberal Arts**