

BS in Data Science with a Bioinformatics Concentration

Degree Requirements

To earn a Bachelor of Science in Data Science with Bioinformatics Concentration from UIC, students need to complete university, college, and department degree requirements. The Department of Computer Science degree requirements are outlined below. Students should consult the [College of Engineering](#) section for additional degree requirements and college academic policies.

| Code | Title | Hours |
|---|-------|------------|
| Summary of Requirements | | |
| General and Basic Education Requirements | | 37 |
| Core Courses | | 57 |
| Bioinformatics Concentration Requirements | | 15-16 |
| Free Electives | | 10-11 |
| Total Hours | | 120 |

General and Basic Education Requirements

| Code | Title | Hours |
|---|---|-----------|
| ENGL 160 | Academic Writing I: Writing in Academic and Public Contexts | 3 |
| ENGL 161 | Academic Writing II: Writing for Inquiry and Research | 3 |
| Foreign Language | | 8 |
| Understanding the Individual and Society course ^a | | 3 |
| Understanding U.S. Society course ^a | | 3 |
| Exploring World Cultures course ^a | | 3 |
| Understanding the Creative Arts course ^a | | 3 |
| Understanding the Past course ^a | | 3 |
| Two Analyzing the Natural World courses (with lab) ^{a,b} | | 8 |
| Total Hours | | 37 |

^a Students should consult the [General Education](#) section of the catalog for a list of approved courses.

^b Students planning to pursue the Bioinformatics Concentration will take BIOS 110 and BIOS 120 to fulfill the Analyzing the Natural World requirement.

Core Courses

| Code | Title | Hours |
|-------------------------|--|-------|
| Required Courses | | |
| ENGR 100 | Engineering Orientation (no graduation credit) | 1 |
| MATH 180 | Calculus I | 4 |
| MATH 181 | Calculus II | 4 |
| MATH 210 | Calculus III | 3 |
| MATH 310 | Applied Linear Algebra | 3 |
| CS 111 | Program Design I | 3 |
| CS 141 | Program Design II | 3 |

| | | |
|------------------------------|---|-----------|
| CS 151 or MCS 361 | Mathematical Foundations of Computing Discrete Mathematics | 3 |
| CS 211 | Programming Practicum | 2 |
| CS 251 | Data Structures | 4 |
| CS 377 | Communication and Ethical Issues in Computing | 3 |
| Select one of the following: | | 3 |
| STAT 381 | Applied Statistical Methods I | |
| IE 342 | Probability and Statistics for Engineers ^a | |
| ECE 341 | Probability and Random Processes for Engineers ^b | |
| STAT 382 or IDS 462 | Statistical Methods and Computing Statistical Software for Business Applications | 3 |
| STAT 385 | Elementary Statistical Techniques for Machine Learning and Big Data | 3 |
| STAT 481 | Applied Statistical Methods II | 3 |
| IDS 312 | Business Project Management | 3 |
| IDS 435 | Optimization for Analytics | 3 |
| CS 418 or IDS 472 | Introduction to Data Science ^c Business Data Mining | 3 |
| CS 480 or IDS 410 | Database Systems ^c Business Database Technology | 3 |
| Total Hours | | 57 |

^a IE 342 must be taken for the Concentration in Industrial Engineering.

^b ECE 341 must be taken for the Concentration in Data Processing, Science, and Engineering.

^c CS 418 and CS 480 must be taken for the Concentration in Computer Science.

Bioinformatics Concentration Requirements

| Code | Title | Hours |
|-------------------------------|---|--------------|
| Required Prerequisites | | |
| BIOS 110 | Biology of Cells and Organisms ^a | |
| BIOS 120 | Biology of Populations and Communities ^a | |
| Required Courses | | |
| BIOS 220 | Genetics | 3 |
| BIOS 430 | Evolution | 4 |
| BME 480 | Intro to Bioinformatics | 3 |
| BME 481 | Bioinformatics Laboratory | 2 |
| Select one of the following: | | 3-4 |
| BME 240 | Modeling Physiological Data and Systems | |
| BME 339 | Biostatistics I | |
| BME 407 | Pattern Recognition I | |
| BIOE 439 | | |
| Total Hours | | 15-16 |

Free Electives

| Code | Title | Hours |
|--------------------------------------|-------|--------------|
| Electives | | |
| Select 10-11 hours of Free Electives | | 10-11 |
| Total Hours | | 10-11 |

^a This course counts toward the Analyzing the Natural World (with lab) General Education requirement.

Sample Course Schedule

| Course | Title | Hours |
|--|---|-----------|
| First Year | | |
| First Semester | | |
| CS 111 | Program Design I | 3 |
| ENGL 160 | Academic Writing I: Writing in Academic and Public Contexts | 3 |
| MATH 180 | Calculus I | 4 |
| Analyzing the Natural World (with Lab) | General Education course | 4 |
| ENGR 100 | Engineering Orientation | 1 |
| Hours | | 15 |
| Second Semester | | |
| CS 141 | Program Design II | 3 |
| ENGL 161 | Academic Writing II: Writing for Inquiry and Research | 3 |
| MATH 181 | Calculus II | 4 |
| General Education Core course | | 3 |
| Foreign Language | | 4 |
| Hours | | 17 |
| Second Year | | |
| First Semester | | |
| CS 151 or MCS 361 | Mathematical Foundations of Computing or Discrete Mathematics | 3 |
| CS 211 | Programming Practicum | 2 |
| STAT 381 or IE 342 or ECE 341 | Applied Statistical Methods I or Probability and Statistics for Engineers or Probability and Random Processes for Engineers | 3 |
| Analyzing the Natural World (with lab) | General Education course | 4 |
| Foreign Language | | 4 |
| Hours | | 16 |
| Second Semester | | |
| CS 251 | Data Structures | 4 |
| STAT 382 or IDS 462 | Statistical Methods and Computing or Statistical Software for Business Applications | 3 |
| IDS 312 | Business Project Management | 3 |
| MATH 210 | Calculus III | 3 |
| General Education Core course | | 3 |
| Hours | | 16 |
| Third Year | | |
| First Semester | | |
| CS 377 | Communication and Ethical Issues in Computing | 3 |
| CS 480 or IDS 410 | Database Systems or Business Database Technology | 3 |
| STAT 385 | Elementary Statistical Techniques for Machine Learning and Big Data | 3 |

| | | |
|-------------------------------|---|------------|
| MATH 310 | Applied Linear Algebra | 3 |
| General Education Core course | | 3 |
| Hours | | 15 |
| Second Semester | | |
| CS 418 or IDS 472 | Introduction to Data Science or Business Data Mining | 3 |
| STAT 481 | Applied Statistical Methods II | 3 |
| IDS 435 | Optimization for Analytics | 3 |
| Concentration Requirement | | 3 |
| Free Elective | | 3 |
| Hours | | 15 |
| Fourth Year | | |
| First Semester | | |
| Concentration Requirement | | 3 |
| Concentration Requirement | | 3 |
| General Education Core course | | 3 |
| Free Elective | | 4 |
| Hours | | 13 |
| Second Semester | | |
| Concentration Requirement | | 3 |
| Concentration Requirement | | 3 |
| General Education Core course | | 3 |
| Free Elective | | 4 |
| Hours | | 13 |
| Total Hours | | 120 |