

# BS in Data Science with Statistics Concentration

## Degree Requirements

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

Code	Title	Hours
<b>Summary of Requirements</b>		
General and Basic Education Requirements		37
Core Courses		57
Statistics Concentration Requirements		15
Free Electives		11
<b>Total Hours</b>		<b>120</b>

## 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 <sup>a</sup>		8
Understanding the Individual and Society course <sup>b</sup>		3
Understanding U.S. Society course <sup>b</sup>		3
Exploring World Cultures course <sup>b</sup>		3
Understanding the Creative Arts course <sup>b</sup>		3
Understanding the Past course <sup>b</sup>		3
Two Analyzing the Natural World courses (with lab) <sup>b,c</sup>		8
<b>Total Hours</b>		<b>37</b>

a Additional information on the [COE's foreign language policy](#) can be found in the [College of Engineering](#) section of the catalog.

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

c 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
<b>Required Courses</b>		
ENGR 100	Engineering Success Seminar (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
Select one of the following		3
CS 111	Program Design I	

CS 112	Program Design I in the Context of Biological Problems	
CS 113	Program Design I in the Context of Law and Public Policy	
CS 141	Program Design II	3
CS 151	Mathematical Foundations of Computing	3
or MCS 361	Discrete Mathematics	
CS 211	Programming Practicum	3
CS 251	Data Structures	4
CS 377	Ethical Issues in Computing	3
Select one of the following:		3
STAT 381	Applied Statistical Methods I	
IE 342	Probability and Statistics for Engineers <sup>a</sup>	
ECE 341	Probability and Random Processes for Engineers <sup>b</sup>	
STAT 382	Statistical Methods and Computing	3
or IDS 462	Statistical Software for Business Applications	
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	Introduction to Data Science <sup>c</sup>	3
or IDS 472	Business Data Mining	
CS 480	Database Systems <sup>c</sup>	3
or IDS 410	Business Database Technology	
<b>Total Hours</b>		<b>57</b>

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.

## Statistics Concentration Requirements

Code	Title	Hours
<b>Required Courses</b>		
STAT 401	Introduction to Probability	3
STAT 411	Statistical Theory	3
STAT 451	Computational Statistics	3
STAT 485	Intermediate Statistical Techniques for Machine Learning and Big Data	3
STAT 486	Statistical Consulting	3
<b>Optional Electives</b>		
CS 411	Artificial Intelligence I	
CS 424	Visualization and Visual Analytics	
STAT 431	Introduction to Survey Sampling	
STAT 475	Mathematics and Statistics for Actuarial Sciences I	
<b>Total Hours</b>		<b>15</b>

## Free Electives

Code	Title	Hours
<b>Electives</b>		
Select 11 hours of Free Electives.		11
<b>Total Hours</b>		<b>11</b>

## Sample Course Schedule

Course	Title	Hours
<b>First Year</b>		
<b>First Semester</b>		
CS 111 or CS 112 or CS 113	Program Design I or Program Design I in the Context of Biological Problems or Program Design I in the Context of Law and Public Policy	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 Success Seminar (no graduation credit)	1
<b>Hours</b>		<b>14</b>
<b>Second Semester</b>		
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
<b>Hours</b>		<b>17</b>
<b>Second Year</b>		
<b>First Semester</b>		
CS 151 or MCS 361	Mathematical Foundations of Computing or Discrete Mathematics	3
CS 211	Programming Practicum	3
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
<b>Hours</b>		<b>17</b>
<b>Second Semester</b>		
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
<b>Hours</b>		<b>16</b>
<b>Third Year</b>		
<b>First Semester</b>		
CS 377	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
<b>Hours</b>		<b>15</b>
<b>Second Semester</b>		
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
<b>Hours</b>		<b>15</b>
<b>Fourth Year</b>		
<b>First Semester</b>		
Concentration Requirement		3
Concentration Requirement		3
General Education Core course		3
Free Elective		4
<b>Hours</b>		<b>13</b>
<b>Second Semester</b>		
Concentration Requirement		3
Concentration Requirement		3
General Education Core course		3
Free Elective		4
<b>Hours</b>		<b>13</b>
<b>Total Hours</b>		<b>120</b>