

### Major Requirements: Bioinformatics Emphasis

Course Number and Description	Credits
<input type="checkbox"/> <b>CS 1400</b> Introduction to Computer Science—CS 1 (F,Sp,Su)	3
<input type="checkbox"/> <b>CS 1405</b> Introduction to Computer Science—CS 1 Lab (F,Sp,Su)	1
<input type="checkbox"/> <b>CS 1410 (QI)</b> Introduction to Computer Science—CS 2 (F,Sp,Su)	3
<i>One of the following two options:</i>	6
<input type="checkbox"/> <b>CS 2410</b> Introduction to GUIs in Java (F,Sp) (3 cr) <i>and</i>	
<input type="checkbox"/> <b>CS 2610</b> Developing Dynamic, Database-driven Web Applications (F,Sp) (3 cr)	
<i>or</i>	
<input type="checkbox"/> <b>CS 2412</b> Introduction to GUIs in C# (F,Sp) (3 cr) <i>and</i>	
<input type="checkbox"/> <b>CS 2612</b> Web Applications in ASP.NET (F,Sp) (3 cr)	
<input type="checkbox"/> <b>CS 2420 (QI)</b> Algorithms and Data Structures—CS 3 (F,Sp,Su)	3
<input type="checkbox"/> <b>CS 3000</b> Undergraduate Seminar (F,Sp)	1
<input type="checkbox"/> <b>CS 3100</b> Operating Systems and Concurrency (F,Sp)	3
<input type="checkbox"/> <b>CS 3450 (CI)</b> Introduction to Software Engineering (F,Sp)	3
<input type="checkbox"/> <b>CS 3810</b> Computer Systems Organization & Architecture II (Sp)	3
<input type="checkbox"/> <b>CS 4700</b> Programming Languages (F,Sp)	3
<input type="checkbox"/> <b>CS 5050</b> Advanced Algorithms (F,Sp)	3
<input type="checkbox"/> <b>CS 5660</b> Bioinformatics I (F)	3
<input type="checkbox"/> <b>CS 5670</b> Bioinformatics II (Sp)	3
<input type="checkbox"/> <b>CS 5800</b> Database Systems (F)	3
<input type="checkbox"/> <b>MATH 1210 <math>\Sigma</math> (QL)</b> Calculus I (F,Sp,Su)	4
<input type="checkbox"/> <b>MATH 1220 <math>\Sigma</math> (QL)</b> Calculus II (F,Sp,Su).4	4
<i>One of the following two courses:</i>	3-4
<input type="checkbox"/> <b>MATH 2250 <math>\Sigma</math> (QI)</b> Linear Algebra and Differential Equations (F,Sp,Su) (4 cr)	
<i>or</i>	
<input type="checkbox"/> <b>MATH 2270 <math>\Sigma</math> (QI)</b> Linear Algebra (F,Sp) (3 cr)	
<input type="checkbox"/> <b>MATH 3310 <math>\Sigma</math></b> Discrete Mathematics (F,Sp)	3
<input type="checkbox"/> <b>STAT 3000 <math>\Sigma</math> (QI)</b> Statistics for Scientists (F,Sp,Su)	3
<i>One of the following 3 courses:</i>	3
<input type="checkbox"/> <b>CMST 3250 (CI)</b> Organizational Communication (F,Sp) (3 cr) <b>or</b>	
<input type="checkbox"/> <b>ENGL 3080 (CI)</b> Introduction to Technical Communication (F,Sp) (3 cr)	
<input type="checkbox"/> <b>MIS 3200 (CI)</b> Business Communication (F,Sp,Su) (3 cr)	
<input type="checkbox"/> <b>BIOL 1610 S-Q</b> Biology I (F)	4
<input type="checkbox"/> <b>BIOL 3060 <math>\Sigma</math> S-Q (QI)</b> Principles of Genetics	4
For students who take CHEM 1210, 1215, 1220, and 1225, BIOL 1610 and BIOL 3060 together fulfill the breadth life science (BLS) general education requirement.	
<input type="checkbox"/> <b>BIOL 3100 (CI)</b> Bioethics (Sp)	3
<i>One of the following 2 options:</i>	5
<input type="checkbox"/> <b>CHEM 1110 S-Q (BPS)</b> General Chemistry I (F,Sp) (4 cr) <i>and</i> <b>CHEM 1115 S-Q</b> General Chemistry Laboratory (F,Sp) (1 cr)	
<i>or</i>	
<input type="checkbox"/> <b>CHEM 1210 S-Q</b> Principles of Chemistry I (F,Sp) (4 cr) <i>and</i> <b>CHEM 1215 S-Q</b> Chemical Principles Laboratory I (F,Sp) (1 cr)	

*Bioinformatics Emphasis -- continued*

<p>One of the following 2 options: <span style="float: right;">4-5</span></p> <p><input type="checkbox"/> <b>BIOL 1620 S-Q (BLS)</b> Biology II (4 cr)</p> <p style="text-align: center;"><i>or</i></p> <p><input type="checkbox"/> <b>CHEM 1220 S-Q (BPS)</b> Principles of Chemistry II (F,Sp) (4 cr) <i>and</i> <b>CHEM 1225 S-Q</b> Chemical Principles Laboratory II (F,Sp) (1 cr). <i>Students should keep in mind that CHEM 1210 &amp; 1215 are the prerequisites to CHEM 1220 &amp; 1225.</i></p> <p>For students who take CHEM 1210, 1215, 1220, and 1225, BIOL 1610 and BIOL 3060 together fulfill the breadth life science (BLS) general education requirement.</p>
<p>Students are strongly encouraged to take one of the following options. <i>Students in the bioinformatics emphasis who do not take one of these options must have prior written approval from their academic advisor, and advisor approval for substitute course(s).</i> <span style="float: right;">3-5</span></p> <p><i>Students should keep in mind that CHEM 1210 is the prerequisite to CHEM 2300, CHEM 1220 &amp; 1225 are the prerequisites to CHEM 2310 and 2315.</i></p> <p><input type="checkbox"/> <b>CHEM 2300</b> Principles of Organic Chemistry (F) (3 cr)</p> <p style="text-align: center;"><i>or</i></p> <p><input type="checkbox"/> <b>CHEM 2310</b> Organic Chemistry I (F) ( cr) <i>and</i> <b>CHEM 2315</b> Organic Chemistry Laboratory I (F) (1 cr)</p>
<p>Students are strongly encouraged to take the following course. <i>Students in the bioinformatics emphasis who do not take the following course must have prior written approval from their academic advisor, and advisor approval for substitute course(s).</i> <span style="float: right;">3</span></p> <p><i>Students should keep in mind that either CHEM 2300 or 2310 can serve as the prerequisite to CHEM 3700.</i></p> <p><input type="checkbox"/> <b>CHEM 3700</b> Introductory Biochemistry (Sp)</p>
<p><i>Select at least 3 credits from the following courses.</i> <span style="float: right;">3</span></p> <p><input type="checkbox"/> <b>CS 3200</b> Mobile Application Development (F,Sp) (3 cr)</p> <p><input type="checkbox"/> <b>CS 3430</b> Python and Perl Programming (Sp) (3 cr)</p> <p><input type="checkbox"/> <b>CS 4250</b> Cooperative Work Experience (F,Sp,Su) (1-9 cr)</p> <p><input type="checkbox"/> <b>CS 4720</b> Computer Networking 1 (F,Sp) (3 cr)</p> <p><input type="checkbox"/> <b>CS 4950</b> Undergraduate Research (F,Sp,Su) (3 cr)</p>
<p><i>Select one course from the following.</i> <span style="float: right;">4</span></p> <p><input type="checkbox"/> <b>CS 5100</b> Graphical User &amp; Interfaces (GUIs) (Sp) (4 cr)</p> <p><input type="checkbox"/> <b>CS 5200</b> Distributed &amp; Network Programming (F) (4 cr)</p> <p><input type="checkbox"/> <b>CS 5300</b> Compiler Construction (F) (4 cr)</p> <p><input type="checkbox"/> <b>CS 5400</b> Computer Graphics I (F) (4 cr)</p> <p><input type="checkbox"/> <b>CS 5410</b> Game Development (Sp) (4 cr)</p> <p><input type="checkbox"/> <b>CS 5600</b> AI: Problem Solving &amp; Expert Systems (F) (4 cr)</p> <p><input type="checkbox"/> <b>Advisor-approved</b></p>