

**Bachelor of Science with Major in Mathematics**  
**Concentration in Bioinformatics**  
**(For Students entering in Fall 2010)**

<b>Freshman Year / Fall Semester</b>	<b>Cr.</b>	<b>Freshman Year / Spring Semester</b>	<b>Cr.</b>
___ 92.131 Calculus I	4	___ 92.132 Calculus II	4
___ 91.101 Computing I	4	___ 91.102 Computing II	4
___ 84.121 Chemistry I	3	___ 84.122 Chemistry II	3
___ 84.123 Chemistry I Lab	1	___ 84.124 Chemistry II Lab	1
___ 42.101 (Gen Ed) College Writing I	<u>3</u>	___ 42.102 (Gen Ed) College Writing II	<u>3</u>
	<b>15</b>		<b>15</b>
<b>Sophomore Year / Fall Semester</b>	<b>Cr.</b>	<b>Sophomore Year / Spring Semester</b>	<b>Cr.</b>
___ 92.231 Calculus III	4	___ 92.23 Differential Equations (234 or 236)	3
___ 92.221 Linear Algebra I	3	___ 92.222 Linear Algebra II	3
___ 91.201 Computing III	4	___ 81.112 Principles of Biology II	3
___ 81.111 Principles of Biology I	3	___ 81.114 Principles of Biology II Lab	1
___ 81.113 Principles of Biology I Lab	<u>1</u>	___ ._. (Gen Ed) AH	3
	<b>15</b>	___ ._. (Gen Ed) SS	<u>3</u>
			<b>16</b>
<b>Junior Year / Fall Semester</b>	<b>Cr.</b>	<b>Junior Year / Spring Semester</b>	<b>Cr.</b>
___ 92.321 Discrete Structures I (see note p. 2)	3	___ 92.322 Discrete Structures II	3
___ 92. ___ Probability/Statistics Elective	3	___ 92.362 Numerical Analysis I	3
___ ._. (Gen Ed) AH	3	___ 91.301 Org. of Programming Lang.	3
___ ._. (Gen Ed) SS	3	___ ._. (Gen Ed) AH	3
___ 42. ___ Writing Requirement	<u>3</u>	___ ._. (Gen Ed) SS	3
	<b>15</b>	___ 92.375 Senior Seminar I	<u>1</u>
			<b>16</b>
<b>Senior Year / Fall Semester</b>	<b>Cr.</b>	<b>Senior Year / Spring Semester</b>	<b>Cr.</b>
___ 92. ___ Basic Analysis Elective	3	___ 92. ___ Analysis Elective	3
___ 92. ___ Math Elective	3	___ 91.404 Analysis of Algorithms	3
___ ._. Free Elective	3	___ ._. Bio/Chem Elective	3
___ ._. Bio/Chem Elective	3	___ ._. Free Elective	3
___ 92.475 Senior Seminar II	<u>3</u>	___ ._. Free Elective	<u>3</u>
	<b>15</b>		<b>15</b>

**Minimum total credits = 120**

Consult the Gen. Ed. web site <http://www.uml.edu/gened> regarding General Education (Gen. Ed.) requirements.

Course selections are subject to restrictions. See reverse side for additional information.

**Bachelor of Science with Major in Mathematics:  
Concentration in Bioinformatics****Mathematics Requirements (92.xxx)**

Calculus:	131,132 and 231
Linear Algebra:	221 and 222
Differential Equations:	one of 234, 236
Discrete Structures:	321 and 322
Analysis I:	one of 305,411,501,503
Analysis II:	One of 301, 305, 306, 411, 412, 413, 420, 421, 442, 450
Probability & Statistics:	One of 385, 386, 486
Senior Seminar:	375 and 475
Math Electives:	One mathematics courses at the 300 level or higher (except 363)
Concentration Requirements:	362

**Note:** None of the above courses can be used to satisfy two different requirements.  
305 and 503 cannot both be used to satisfy the two-course Analysis requirement.

The following courses cannot be used as Electives:

Quantitative Reasoning 111; Management Precalculus 121; Management Calculus 122  
Preparation for Calculus 127; Explorations in Math 151; Introduction to Statistics 283;  
Intro to Data Analysis 363.

No more than 60 Math credits can be counted toward the degree.

**Writing Requirement:** 42.229 (Essay Writing for Non-English Majors). If a student has completed other courses with substantial writing requirements, he/she can petition to have that work satisfy the mathematics writing requirement.

Students with a joint major in Computer Science should take 42.220 (Oral and Written Communication for CS Majors) rather than 42.229.

**General Education Electives** must include at least 6 courses:

3 in Arts & Humanities (AH) and 3 in Social Sciences (SS); one course must satisfy the Diversity (D) requirement and one the Ethics (E) requirement. No more than two courses from a single department can be used to satisfy these Gen Ed requirements.

Math/Science Gen ED requirements are fulfilled by the major's courses.

**Computer Science Minor:** Successful completion of an appropriate CS course as a free elective satisfies the requirements for a Minor in Computer Science.

**Computer Science Major:** Successful completion of appropriate Computer Science Courses as free electives will satisfy the requirements for a Major in Computer Science.

CS majors must take a course in Ethics in Computer Science.

**Advice to Students:** Any deviations from this sample program of study require permission of the Mathematics Undergraduate Coordinator or Department Chair. To receive written permission, use an Academic Petition form and keep a copy for your own files.

**Bachelor of Science Requirements:** A minimum of 74 credits and 20 courses from the Offerings of science and mathematics; four science lecture courses with corequisite labs, including a two semester sequence in a department other than Mathematics—91.101(Computing I), 91.102 (Computing II), 92.231/232 (Calculus III & Math Lab I) and 92.236 (Engineering Diff.Eqns) qualify.