## **Curriculum in General Biology with Education**

	Freshman Fall Semester			Freshman Spring Semester	
Course	Course Name	Cr	Course	Course Name	Cr
23-101	General Biology I	4	23-102	General Biology II	4
24-101	General and Analytical Chem. I	4	24-102	General and Analytical Chem. II	4
01-101	English Composition I	3	01-102	English Composition II	3
	Social Science	3	25-122	Trigonometry	3
23-191	University Seminar I	1	23-192	University Seminar II	1
			23-194	Intro. to Biology Professions	1
Total Credits 15				Total Credits	16
Sophomore Fall Semester			Sophomore Spring Semester		
Course	Course Name	Cr	Course	Course Name	Cr
23-215	Cell Biology	4	23-210	Genetics	4
24-301	Organic Chemistry I	4	24-302	Organic Chemistry II	4
16-100	Fitness and Wellness	2		Literature	3
	Statistics	3		History	3
01-200	Speech	3	23-299	Soph. Seminar ? Sci. Literature	1
	Total Credits	16		Total Credits	15
	Total Credits Junior Fall Semester	16		Total Credits Junior Spring Semester	15
Course	Total Credits Junior Fall Semester Course Name	16 <b>Cr</b>	Course	Total Credits Junior Spring Semester Course Name	15 <b>Cr</b>
<b>Course</b> 23-310	Total Credits Junior Fall Semester Course Name Molecular Biology	16 <b>Cr</b> 4	<b>Course</b> 24-403	Total Credits Junior Spring Semester Course Name Biochemistry OR	15 <b>Cr</b>
<b>Course</b> 23-310 23-205	Total Credits Junior Fall Semester Course Name Molecular Biology Ecology	16 <b>Cr</b> 4 4	<b>Course</b> 24-403 23-422	Total Credits Junior Spring Semester Course Name Biochemistry OR Biochemical Mechanisms	15 <b>Cr</b> 4
<b>Course</b> 23-310 23-205 <b>23-xxx</b>	Total Credits Junior Fall Semester Course Name Molecular Biology Ecology Biology Elective	16 <b>Cr</b> 4 4 4	Course 24-403 23-422 31-395	Total Credits Junior Spring Semester Course Name Biochemistry OR Biochemical Mechanisms Global Societies	15 <b>Cr</b> 4 3
<b>Course</b> 23-310 23-205 <b>23-xxx</b> 26-111	Total Credits Junior Fall Semester Course Name Molecular Biology Ecology Biology Elective Introduction to Physics I	16 <b>Cr</b> 4 4 4 4	Course 24-403 23-422 31-395 26-112	Total Credits Junior Spring Semester Course Name Biochemistry OR Biochemical Mechanisms Global Societies Introduction to Physics II	15 <b>Cr</b> 4 3 4
<b>Course</b> 23-310 23-205 <b>23-xxx</b> 26-111	Total Credits Junior Fall Semester Course Name Molecular Biology Ecology Biology Elective Introduction to Physics I	16 <b>Cr</b> 4 4 4 4	Course 24-403 23-422 31-395 26-112 23-399	Total CreditsJunior Spring SemesterCourse NameBiochemistry ORBiochemical MechanismsGlobal SocietiesIntroduction to Physics IIJunior Seminar-Sci. Writing*	15 <b>Cr</b> 4 3 4 1
<b>Course</b> 23-310 23-205 <b>23-xxx</b> 26-111	Total Credits Junior Fall Semester Course Name Molecular Biology Ecology Biology Elective Introduction to Physics I	16 <b>Cr</b> 4 4 4 4	Course 24-403 23-422 31-395 26-112 23-399 23-xxx	Total CreditsJunior Spring SemesterCourse NameBiochemistry ORBiochemical MechanismsGlobal SocietiesIntroduction to Physics IIJunior Seminar-Sci. Writing*Biology Elective	15 <b>Cr</b> 4 3 4 1 4
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<b>Course</b> 23-310 23-205 <b>23-xxx</b> 26-111	Total Credits  Junior Fall Semester  Course Name  Molecular Biology  Ecology  Biology Elective  Introduction to Physics I  Total Credits	16 <b>Cr</b> 4 4 4 4 1 16	Course 24-403 23-422 <b>31-395</b> 26-112 23-399 23-xxx	Total Credits Junior Spring Semester Course Name Biochemistry OR Biochemical Mechanisms Global Societies Introduction to Physics II Junior Seminar-Sci. Writing* Biology Elective Total Credits	15 <b>Cr</b> 4 3 4 1 4 1 4
Course 23-310 23-205 23-xxx 26-111	Total Credits Junior Fall Semester Course Name Molecular Biology Ecology Biology Elective Introduction to Physics I Total Credits Senior Fall Semester	16 <b>Cr</b> 4 4 4 4 16	Course 24-403 23-422 <b>31-395</b> 26-112 23-399 23-xxx	Total Credits         Junior Spring Semester         Course Name         Biochemistry OR         Biochemical Mechanisms         Global Societies         Introduction to Physics II         Junior Seminar-Sci. Writing*         Biology Elective         Total Credits         Senior Spring Semester	15 <b>Cr</b> 4 3 4 1 4 1 4
Course 23-310 23-205 23-xxx 26-111 Course	Total Credits         Junior Fall Semester         Course Name         Molecular Biology         Ecology         Biology Elective         Introduction to Physics I         Total Credits         Senior Fall Semester         Course Name	16 <b>Cr</b> 4 4 4 4 16 <b>Cr</b>	Course 24-403 23-422 31-395 26-112 23-399 23-xxx Course	Total Credits         Junior Spring Semester         Course Name         Biochemistry OR         Biochemical Mechanisms         Global Societies         Introduction to Physics II         Junior Seminar-Sci. Writing*         Biology Elective         Total Credits         Senior Spring Semester         Course Name	15 Cr 4 3 4 1 4 16 Cr
Course 23-310 23-205 23-xxx 26-111	Total Credits         Junior Fall Semester         Course Name         Molecular Biology         Ecology         Biology Elective         Introduction to Physics I         Total Credits         Senior Fall Semester         Course Name         Arts and Humanities	16 Cr 4 4 4 4 4 16 Cr 3	Course 24-403 23-422 31-395 26-112 23-399 23-xxx Course	Total Credits         Junior Spring Semester         Course Name         Biochemistry OR         Biochemical Mechanisms         Global Societies         Introduction to Physics II         Junior Seminar-Sci. Writing*         Biology Elective         Total Credits         Senior Spring Semester         Course Name         Arts and Humanities	15 Cr 4 3 4 1 4 16 Cr 3
Course 23-310 23-205 23-xxx 26-111 Course	Junior Fall Semester         Course Name         Molecular Biology         Ecology         Biology Elective         Introduction to Physics I         Senior Fall Semester         Course Name         Arts and Humanities         Biology Elective	16 Cr 4 4 4 4 4 4 16 Cr 3 4	Course 24-403 23-422 31-395 26-112 23-399 23-xxx Course 23-xxx	Total Credits         Junior Spring Semester         Course Name         Biochemistry OR         Biochemical Mechanisms         Global Societies         Introduction to Physics II         Junior Seminar-Sci. Writing*         Biology Elective         Total Credits         Senior Spring Semester         Course Name         Arts and Humanities         Biology Elective	15 Cr 4 3 4 1 4 1 4 16 Cr 3 4

23-301	Problems in Biology <b>OR</b>			Open Elective	3-4
23-451	Senior Research (Capstone I)**	2	23-499	Senior Seminar (Capstone II)**	1
	Total Credits	13		Total Credits	14-16
				Total Credits	s: 121-1

Enroll in 5th year in the Department of Education?s one year MAT program to also receive a Masters of Arts in Teaching, which is required and provides vehicle for certification.

- \*\* Senior Capstone
- \* Writing Intensive Course(s)

**BIOLOGY ELECTIVES**: Students must not take less than 18 credits of Biology courses from the course elective list below. These are the only ones that can satisfy the Biology elective requirement for this track. Substitutions can be requested, under special circumstances, but written approval of advisor and Chair is needed.

The Curriculum Tracks are designed for the intended career goal, including anticipation of entrance examinations, so students should adhere to the suggested sequence. It is advisable for the student to check possible post graduate school requirements during their Junior year to ensure that satisfy expectations of intended graduate/profession choices.

**<u>REQUIREMENTS</u>**: Students can not take either 23-210 or 23-215 without first passing both 23-101 and 23-102 with a grade of "C" or better. In order for a student to take any 300 or 400 level Biology Department course, they must also pass both 23-210 and 23-215 with a "C" or better. These grade requirements take precedence over, and supersede any lesser specific prerequisites of all 300 or 400 level Biology electives. All students must pass the Biology Comprehensive Assessment (BCA) examination of core courses given to all students in 23-399. If they do not pass, then the student must take 23-498 and pass the BCA, which is required for successful completion of this course, and the biology program.

<u>SPECIAL NOTES</u>: For all programs and tracks, a grade of ?C? or better is required for all Biology courses. For the Cell/Molecular/Biotechnology and for the Health Professions tracks, a grade of ?C? or better is also required in all CMNST courses.

All Biology majors must complete an independent research project. Those who have completed a research project with a biology faculty member (e.g. 23-301 for credit, or via a paid stipend) prior to the beginning of their senior year, and especially if the project was an internship at another institution, the student must present their data to their advisor in order to be exempted from the required Senior Capstone I course. If they have not completed a research project, or their internship is inadequate, then they must register for 23-451or 452 to complete a Capstone research project.

If you take, 23-422 instead of 24-403, then you will need to take another Chemistry course if you want a minor in Chemistry ? Instrumental Analysis (24-306) with lab is suggested. Another set of courses the student can consider is Physics-317 (Foundations of Bioengineering) and Physics 409 (Biosensors and Bio-instrumentation) as electives with

advisor, instructor, and Biology Chair approval.

All Biology majors are required to successfully complete Senior Seminar (Capstone II, 23-499), no exceptions.

**<u>General Note</u>**: The minimum University requirement for graduation is 121 hours; in Biology you will usually complete between 121-125 hours depending on selections.

Biology Electives needed:	Open Electives needed:		
(from all at least one in groups I, II, III)			
23-200 Invertebrate Zoology (III)	36-201 General Psychology		
29-212 General Botany (III)	36-316 Developmental Psychology		
23-322 Microbiology (II)	27-101 Geology		
OTHER Possible Electives:	29-205 Plant Physiology		
23-302 Comp. Vertebrate Anatomy (I)	29-213 Systematic Botany		
23-305 Developmental Biology (I)	30-311 Mammalogy		
23-315 Behavior (III)	30-312 Ornithology		
23-352 Histology (II)	30-314 Ichthyology		
23-420 Immunology (I)	30-456 Wetlands Biology		
23-421 Microbial Physiol and Ecology (II)	30-465 Marine Biology		

## General Biology ?Teaching High School Biology

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