Curriculum in Cell/Molecular/Biotechnology

Freshman Fall Semester			Freshman Spring Semester	
Course	**Course Name**	**Cr**	**Course**	**Course Name**
23-101	General Biology I	4	23-102	General Biology II
24-101	General and Analytical Chem. I	4	24-102	General and Analytical Chem. II
01-101	**English Composition I**	3	**01-102**	**English Composition II**
	Social Science	3	**25-122**	**Trigonometry**
23-191	**University Seminar I**	1	**23-192**	**University Seminar II**
			23-194	Intro. to Biology Professions
	Total Credits	15		Total Credits

Sophomore Fall Semester			Sophomore Spring Semester	
Course	**Course Name**	**Cr**	**Course**	**Course Name**
23-215	Cell Biology	4	23-210	Genetics
24-301	Organic Chemistry I	4	24-302	Organic Chemistry II
16-100	**Fitness and Wellness**	2		**Literature**
23-261	Calculus for Life Sciences	4	23-321	Biostatistics
01-200	**Speech**	3	23-299	Soph. Seminar ? Sci. Literature
	Total Credits	17		Total Credits

Junior Fall Semester			Junior Spring Semester	
Course	**Course Name**	**Cr**	**Course**	**Course Name**
23-310	Molecular Biology	4	24-403	Biochemistry **OR**
23-xxx	Biology Elective	4	23-422	Biochemical Mechanisms
	History	3	**31-395**	**Global Societies**
26-211	Fundamentals of Physics I	4	26-212	Fundamentals of Physics II
			23-399	Junior Seminar-Sci. Writing*
			23-471	Nucleic Acids Biotechnology
	Total Credits	15		Total Credits

Summer Research Internship

Senior Fall Semester			Senior Spring Semester	
Course	**Course Name**	**Cr**	**Course**	**Course Name**
03-105/ 202/322	**Ethics course (Humanities)**	3		**Arts and Humanities**
23-472	Protein Biotechnology	4	23-410	Advanced Molecular Biology

23-415	Advanced Cell Biology	4	23-xxx	Biology Elective
23-301	Problems in Biology **OR**			Open Elective
23-451	Senior Research (Capstone I)**	2	23-499	Senior Seminar (**Capstone** II)**
	Total Credits	13		Total Credits
				Total Credits

** 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 require written approval of advisor and Chair in advance.

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.

REQUIREMENTS: 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.

SPECIAL NOTES: 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.

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

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Biology Electives:	**Open Electives:**
23-305 Developmental Biology	41-105 Management Processes
23-322 Microbiology	41-325 Organizational Behavior
23-375 Mol. Genetics and Genomics	41-341 Business Ethics
23-420 Immunology	41-435 Entrepreneurship
23-317 Principles of Virology	46-300 Principles of Marketing
23-405 Cell Morphogenesis	35-301 Introduction to Bioinformatics
23-307 Principles of Physiology	25-252 Calculus II
23-370 Human Anatomy	23-411 Pharmacology
	23-311 Neuroscience

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