

Curriculum in Biomedical Research

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Freshman Fall Semester

Course	Course Name	Cr
BIOL 201	Organisms ^{\$}	4
CHEM 101	General Chemistry I	4
ENGL 101	English Composition I	3
XXX xxx	Social Science	3
BIOL 191	University Seminar I	1

Total Credits 15

Freshman Spring Semester

Course	Course Name	Cr
BIOL 202	Evolution, Ecology and Diversity	4
CHEM 102	General Chemistry II	4
ENGL 102	English Composition II	3
MTSC 122	Trigonometry	3
BIOL 192	University Seminar II	1
BIOL 194	Intro. to Biology Professions	1

Total Credits 16

Sophomore Fall Semester

Course	Course Name	Cr
BIOL 215	Cell Biology	4
CHEM 210	Organic Chemistry I	4
MVSC 101	Fitness and Wellness	2
MTSC 261	Calculus for Life Sciences (or MTSC 251/252-Calc I & II)	4
ENGL 200	Speech	3
BIOL 301	Problems in Biology (optional)	

Total Credits 17

Sophomore Spring Semester

Course	Course Name	Cr
BIOL 210	Genetics*	4
CHEM 211	Organic Chemistry II	4
ENGL 2xx	Literature[#]	3
BIOL 321	Biostatistics	3
BIOL 299	Soph. Seminar – Sci. Literature	1

Total Credits 15

Summer Research Internship

Junior Fall Semester

Course	Course Name	Cr
BIOL 310	Molecular Biology*	4

Junior Spring Semester

Course	Course Name	Cr
CHEM 403	Biochemistry (offered in	

spring) **OR**

BIOL xxx	Biology Elective	4	BIOL 422	Biochemical Mechanisms (offered in fall)	4
HIST xxx	History[#]	3	GLOB 395	Global Societies	3
PHYS 211	Fundamentals of Physics I	4	PHYS 212	Fundamentals of Physics II	4
BIOL 301	Problems in Biology (optional)		BIOL 399	Junior Seminar-Sci. Writing*	1
			BIOL 470	Biotechnological Processes	4
Total Credits 15			Total Credits 16		

Summer Research Internship

Senior Fall Semester

Course	Course Name	Cr
XX xxx	Arts and Humanities[#]	3
BIOL xxx	Biomedical Elective	4
BIOL xxx	Biology Elective	4
BIOL 451	Senior Research (Capstone I)**	2
Total Credits		13

Senior Spring Semester

Course	Course Name	Cr
PHIL 105/202/322	Ethics course (Humanities). PHIL 322 recommended	3
BIOL xxx	Biomedical Elective	4
BIOL xxx	Biology Elective	4
XXX xxx	Open Elective	3-4
23-499	Senior Seminar (Capstone II)**	1
Total Credits		15-16

Total Credits: 122-123

** Senior Capstone (if BIOL 301 or internship already completed, 451 can be waived but not 499)

* Writing Intensive Course(s)

One of these courses must be used to meet the African American Experience

[§] General Biology I and II (BIOL 101 AND 102) together can substitute for BIOL 201 and 202

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.

BIOMEDICAL RESEARCH ELECTIVES:

Students must take at least two of the following three courses: BIOL-375 Molecular Genetics and Genomics; BIOL-410 Advanced Molecular Biology; BIOL-415 Advanced Cell Biology.

REQUIREMENTS: Students must take each of the five biology core courses (201-202-215-210-310) in sequence and earn a grade of “C” or higher in each respectively before being able to progress to the next in the sequence (BIOL 101-102 can substitute for 201-202 but both of each group must be taken and same grade criteria apply).

In order for a student to take any 300 or 400 level Biology Department course, he or she must have earned a grade of "C" or better in the first four core courses. 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 BIOL-399. If they do not pass, then the student must take BIOL 498 and pass the BCA, which is required for successful completion of this course, and the biology program.

TRANSFER CREDITS: Students who receive transfer credit for courses that are equivalent to BIOL 101 and BIOL102 will be considered to have met the prerequisite for BIOL 215. Students transferring with a grade of “C” or better in Anatomy & Physiology I (207) and Anatomy & Physiology II (208) and Microbiology (322) usually have one (1) Biology elective waived.

SPECIAL NOTES: **For all programs and tracks, a grade of “C” or better is required for all Biology courses.** For the Biomedical 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 23-451 or 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.

Cell/Molecular/Biotechnology

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

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23-370 Human Anatomy	23-411 Pharmacology
	23-311 Neuroscience

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