

## B.S. DEGREE IN BIOLOGICAL SCIENCES – BIOINFORMATICS

Freshman Fall Semester			Freshman Spring Semester		
Course	Course Name	Cr	Course	Course Name	Cr
BIOL-101	General Biology I	4	BIOL-102	General Biology II	4
CHEM-101	General Chemistry I	4	CHEM-102	General Chemistry II	4
<b>ENGL-101</b>	<b>English Composition I</b>	3	<b>ENGL-102</b>	<b>English Composition II</b>	3
	<b>Social Science</b>	3	<b>MTSC-122</b>	<b>Trigonometry</b>	3
<b>BIOL-191</b>	<b>University Seminar I</b>	1	<b>BIOL-192</b>	<b>University Seminar II</b>	1
	Total Credits	15		Total Credits	15
Sophomore Fall Semester			Sophomore Spring Semester		
Course	Course Name	Cr	Course	Course Name	Cr
BIOL-215	Cell Biology	4	BIOL-210	Genetics	4
CHEM-210	Organic Chemistry I	4	CHEM-211	Organic Chemistry II	4
<b>KINE-101</b>	<b>Fitness and Wellness</b>	2	<b>ENGL-xxx</b>	<b>Literature#</b>	3
MTSC-261	Calculus for Life Sciences	4	<b>HIST-xxx</b>	<b>History#</b>	3
<b>ENGL-200</b>	<b>Speech</b>	3	BIOL-399	Professional Scientific Writing <sup>^</sup>	1
	Total Credits	17		Total Credits	15
Junior Fall Semester			Junior Spring Semester		
Course	Course Name	Cr	Course	Course Name	Cr
BIOL-310	Molecular Biology*	4	CHEM-403	Biochemistry <b>OR</b>	--
BIOL-xxx	Biology Elective	4	BIOL-422	Biochemical Mechanisms	4
BIOL-321	Biostatistics	3	PHYS-212	Fundamentals of Physics II	4
PHYS-211	Fundamentals of Physics I	4	BIOL-451	Capstone Research I**	2
	Total Credits	15	BIOL-xxx	Selected Topics in Bioinformatics	4
				Total Credits	14
Summer Research Internship					
Senior Fall Semester			Senior Spring Semester		
Course	Course Name	Cr	Course	Course Name	Cr
	<b>Arts and Humanities#</b>	3	<b>PHIL-xxx OR WMGS-201</b>	<b>Philosophy course (Humanities) OR Intro to Women/Gender Studies</b>	3
INFO-I519 <sup>+</sup>	Introduction to Bioinformatics	3	INFO-B556 <sup>+</sup>	Biological Database Management	3
INFO-B573 <sup>+</sup>	Programming Science Informatics	3	INFO-B528 <sup>+</sup>	Comp Analysis of High Throughput	3
<b>GLOB-395</b>	<b>Global Societies</b>	3		Open Elective	4
BIOL-xxx	Biology Elective	4	BIOL-499	Senior Seminar ( <b>Capstone II</b> )**	1
	Total Credits	16		Total Credits	14
<b>Total Credits: 121</b>					

\*\*Pre-requisite (not co-requisite) for BIOL-499. Bioinformatics Concentration requires a true hypothesis-driven, laboratory-based research experience (i.e. non-research-based internships will not be considered). If waived (i.e. independent research internship completed), a student should register for another open elective to maintain sufficient credits for progress toward the degree.

<sup>^</sup>BIOL 299 may be substituted with Advisor/Chair approval.

<sup>#</sup>One of these courses must be used to meet the African American Experience requirement, and at least one of the others must meet the Multicultural Experience Requirement.

<sup>§</sup>Registration for BIOL-499 requires approval of the Chair of the Undergraduate Academics Committee, Department Chair, and Instructor.

<sup>+</sup>**INFO** courses are offered online through UIPI. Permission of the Bioinformatics Program Director and Chair is required to declare the Bioinformatics concentration and to register for the **INFO** courses. Students may elect to remain on the Biological Sciences/Research Professions Concentration instead.

**BIOLOGY ELECTIVES:** Students must register for one biology elective (4 credits) and one open elective (4 credits) from the course list below. These are the only ones that can satisfy the biology elective/open elective requirements for this concentration. Substitutions can be requested, under special circumstances, but require written approval of Advisor and Chair in advance.

**REQUIREMENTS:** Students must take each of the five biology core courses (101, 102, 215, 210 and 310) in order and earn a “C” or higher in each before being able to progress to the next in the sequence. In order for a student to take any 300 or 400 level Biology Department course, he or she must have earned a “C” in the first four core courses (101, 102, 215, 210). These grade requirements take precedence over, and supersede, any lesser specific prerequisites of all 300 or 400 level biology electives.

**SPECIAL NOTES:** For all programs and concentrations, a grade of “C” or better is required for all biology and other CAST courses.

All Biological Sciences majors on the Bioinformatics Concentration must complete an independent research project. Those who have completed a research project with a faculty member prior to the beginning of their senior year can be exempted from the required Senior Capstone I course with Advisor/Chair approval. If the project was an internship at another institution, students must present their data to their Advisor. If they have not completed a research project or their internship is inadequate, then they must register for BIOL-451 to complete a Capstone research project. All majors in the Department are required to successfully complete Senior Seminar (Capstone II, BIOL- 499); no waivers or substitutions.

**General Note:** The minimum University requirement for graduation is 120 hours; in Biological Sciences, students will usually complete between 121-125 hours depending on selections.

#### Suggested Bioinformatics Electives

##### Recommended Biology Electives:

BIOL-307 Principles of Physiology  
BIOL-311 Neuroscience  
BIOL-317 Principles of Virology  
BIOL-322 Microbiology  
BIOL-315 Principles of Virology  
BIOL-411 Pharmacology  
BIOL-420 Immunology  
(requires PHYS 318)  
BIOL 464 Toxicology

##### Recommended Open Electives:

ENGR-409 Biosensors and Bioinstrumentation  
(requires PHYS 318)  
ENGR-410 Molecular Engineering Systems  
ENGR-409 Biosensors and Bioinstrumentation  
(requires PHYS 318)  
ENGR-410 Molecular Engineering Systems

Electives not on the list require Advisor/Chair written approval in advance. Non-majors biology courses are not suitable electives for Biological Sciences majors, and will not be approved.