

**BIOLOGY-BA OR BS – PRE-PROFESSIONAL***The BA degree requires 3<sup>rd</sup> semester proficiency in a foreign language (201 level).*THIS IS A **GENERAL** CURRICULUM GUIDE AND IS NOT APPLICABLE TO EVERY STUDENT. IT IS IMPORTANT TO MEET WITH YOUR ADVISOR.

Year One			
<b>BIO 121*</b> General Biology II w/lab Prerequisite: MTH 110 (may be taken concurrently)	4 (6)	<b>BIO 120*</b> General Biology I w/lab (GE Life Science) <i>Prerequisites: High school chemistry, CHM 109, or CHM 125+126 strongly recommended (CHM 109 or 125+126 may be taken concurrently)</i>	4 (6)
<b>CHM 125+126</b> Principles of Chemistry I w/lab (GE Physical Science) Prerequisites: High school chemistry and (MTH 110)	3/1(6)	<b>CHM 127+128</b> Principles of Chemistry II w/lab Prerequisites: CHM 125+126 and (MTH 122, 124 or 125 or equivalent by placement or exam)	4/1 (7)
<sup>2</sup> <b>MTH 122</b> College Algebra or Elective <sup>4</sup> Prerequisite: MTH 110 or math placement	3	<sup>1</sup> <b>WRT 130 or WRT 150</b> Strategies in Writing (GE Writing)	3-4
Gen Ed (GE Art) or <sup>1</sup> WRT 120 (self-placement)	3	<sup>2</sup> <b>MTH 123</b> Trigonometry or Elective <sup>4</sup> Prerequisite: MTH 122 (may be taken concurrently) or placement	3
<b>BIO 130</b> Careers in Biology	1		
<i>*It is recommended that BIO majors take BIO 121 before BIO 120.</i>			
<i>Numbers noted within (parentheses) are contact hours</i>	<i>Total</i>	<i>Total</i>	<i>15-16*</i>
	15		
Year Two			
<b>BIO 215</b> Ecology w/lab ( <i>summer/fall only</i> ) (CLAS Voyage, Experiential Learning) Prerequisites: BIO 121	4 (6)	<b>CHM 237+238</b> Organic Chem. for Life Sciences II w/lab Prerequisite: CHM 235+236	3/1 (6)
<b>CHM 235+236</b> Organic Chemistry for Life Sciences I w/lab Prerequisite: CHM 127+128	4/1(7)	<b>Biology Elective</b> (see list below)	3-4
<b>Biology Elective</b> (see list below)	3-4	<sup>4</sup> MTH/STA Requirement (GE Math)	3-4
Gen Ed (GE Social/Behavioral, PSY 101 recommended)	3	Gen Ed (GE Social/Behavioral, SOC 101 recommended)	3
	3	<sup>3</sup> Elective, if needed	1-2
<i>Total</i>	<i>15-16*</i>	<i>Total</i>	<i>14-15</i>
Year Three			
<b>PHY 220</b> General Physics I Prerequisite: MTH 122 and MTH 123	5 (7)	<b>PHY 221</b> General Physics II Prerequisite: PHY 220	5 (7)
<b>CHM 461</b> Biochemistry I Prerequisite: CHM 237+238 or CHM 247 or CHM 248	4	<b>BIO 355</b> Human Genetics <b>OR</b> <b>BIO 375</b> Genetics Prerequisites: BIO 120 or CMB 155 and 156	3
Gen Ed (GE Historical Analysis)	3	<b>BIO 376</b> Genetics Laboratory (CLAS Voyage, Experiential Learning) Prerequisite: BIO 375 or 355 (may be taken concurrently)	1 (3)
Gen Ed (GE US Diversity)	3	Gen Ed (GE Philosophy & Literature)	3
		Issues	3
<i>Total</i>	<i>15</i>	<i>Total</i>	<i>15</i>
Year Four			
<b>CMB 405</b> Cellular and Molecular Biology Prerequisite: BIO 375 or BIO 355; BIO 376; and CHM 234 or CHM 237+238 or CHM 247	4	<sup>5, 6</sup> <b>BIO 495 SWS</b> Perspectives in Biology (CLAS Voyage, Capstone) Prerequisites: Senior Standing, and either STA 215, MTH 125 or MTH 201	3
<b>BIO 210</b> Evolutionary Biology Prerequisites: BIO 120 and BIO 121	3	<b>Biology Elective</b> (see list below)	3-4
<sup>5</sup> Issues+SWS	3	Gen Ed (GE Art) (if needed) or <sup>3</sup> Elective	3
Gen Ed (GE Global Perspectives)	3	<sup>3</sup> Elective or (Gen Ed, if needed)	3
<sup>3</sup> Elective	1-2	<sup>3</sup> Elective	2-3
<i>Total</i>	<i>14-15</i>	<i>Total</i>	<i>15</i>

\*The block tuition rate is for 12-15 credits. You will pay additional tuition for any credits over 15

<sup>1</sup> WRT 150 earned through AP/Dual Enrollment will fulfill the WRT 150 requirement. A grade of C or better is required in WRT 130 or 150.<sup>2</sup> MTH 122 and MTH 123 are not required courses in the Biology major. These courses are prerequisites for other required major courses. MTH 124 and MTH 201 will substitute for MTH 122. **Take the Math Proficiency Tests for MTH 122 and/or 123 online: [www.gvsu.edu/s/mv](http://www.gvsu.edu/s/mv)**<sup>3</sup> Students must have a **minimum of 120 credits** to graduate with **58 of the 120 credits** being from a senior level institution and the **final 30 of the 120 credits** completed at GVSU. Elective refers to any course that will help meet these requirements.<sup>4</sup> Choose one of the following for the math/statistics requirement for the major: MTH 125: Survey of Calculus, MTH 201: Calculus, or STA 215: Introductory Applied Statistics. Students who don't place into MTH 201 should take MTH 124 as a prerequisite instead of MTH 122+123.<sup>5</sup> Students must complete a total of two courses with an SWS attribute.<sup>6</sup> May substitute a 3-credit BIO 490 or BIO 499 with mentor approval. Must occur in final year and include a public presentation. Doesn't satisfy SWS.

**Declaring the Biology Major:**

1. In myBanner, select “Student” > “Student Records” > “Change Major” > “Change Major 1/Program”
2. Choose “Biology-(BA or BS)-Pre-Professional” from the drop-down box.
3. Click “Submit” and then “Change to New Program”
4. Declare “**Preprofessional Preparation**” as your SECOND MAJOR if you are planning on medical, dental, pharmacy, podiatry, chiropractic, optometry, or vet school.

General Education Categories fulfilled by the Biology major:
Life Science and Physical Science: BIO 120 and CHM 125+126 (both fulfill lab requirement)
Social & Behavioral Sciences: PSY 101, SOC 101 recommended
Mathematical Sciences: STA 215, MTH 125, or MTH 201

CLAS Voyage Courses
What is the CLAS Voyage? <a href="https://www.gvsu.edu/clas/clas-voyage-1184.htm">https://www.gvsu.edu/clas/clas-voyage-1184.htm</a> or search “GVSU CLAS Voyage”
Experiential Learning: BIO 215 and BIO 376
Capstone: BIO 495+SWS

**Students in the Pre-Professional Emphasis must complete 9 credits of Biology Electives numbered BIO 222 or higher, or approved courses from related fields listed below. Must include at least two (2) lab courses.**

The following electives are commonly either strongly recommended, or required prerequisites for pre-professional applicants:

- BMS 208 Human Anatomy (3)
- BMS 290 Human Physiology (3)
- BMS 309 Laboratory in Human Anatomy (2)
- BMS 391 Laboratory in Human Physiology (2)
- BMS 212 Introductory Microbiology (3)
- BMS 213 Laboratory in Microbiology (1)
- BMS 410 Immunology (3)
- <sup>1</sup>BMS 450 Human Histology (4)
- BIO 328 Biomedical Ethics (3)
- <sup>1</sup>BIO 422 Animal Development Biology (3) w/lab
- <sup>2</sup>BIO 416 Advanced Genetics Laboratory (2)
- BIO 490 Internship (1-6)
- BIO 499 Research in Biology (1-4)
- CMB 406+SWS Cell and Molecular Biology Laboratory (2)
- PSY 330 Foundations of Behavioral Neuroscience (3)

<sup>1</sup>**Offered in Fall semesters**

<sup>2</sup>**Offered in Winter semesters**

<sup>SS</sup>**Offered in spring/summer**

<sup>E</sup>**Offered in Even years**

<sup>O</sup>**Offered in Odd years**

**Numbers in parentheses indicate # of credits**

#### Additional Biology Major Elective Options

Select from Biology (numbered 222 or higher), Biomedical Sciences (BMS 208 or higher), Behavioral Neuroscience (PSY 300, 330, 350, or 435), Cell and Molecular Biology (CMB 250 or higher), or Natural Resources Management (NRM 150 or higher). Internship and Research credit are encouraged (BIO 490/BIO 499).

#### Notes

- It is recommended to take one of BIO 357 or BMS 212/213, but not both
- It is not recommended to take BIO 355 and BIO 375.

**It is imperative to meet with your faculty mentor and an advisor in the CLAS Academic Advising Center regularly.**

The CLAS Academic Advising Center is located in C-1-120 MAK, 616-331-8585. To schedule an appointment with a Biology and/or Preprofessional Advisor in the CLAS Academic Advising Center, visit [www.gvsu.edu/clasadvising](http://www.gvsu.edu/clasadvising) and click on “Schedule Appointment.” To find more information on Preprofessional programs, visit [www.gvsu.edu/clasadvising/preprofessional](http://www.gvsu.edu/clasadvising/preprofessional).