

**BIOLOGY-BA OR BS-GENERAL** (FOR PRE-PROFESSIONAL STUDENTS)*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 Prerequisites: High school chemistry, CHM 109, or CHM 115 strongly recommended (CHM 109 or 115 may be taken concurrently)	4 (6)
<b>CHM 115</b> Principles of Chemistry I w/lab Prerequisites: High school chemistry and (MTH 110 or MTH 122 or MTH 125 or MTH 201)	4 (6)	<b>CHM 116</b> Principles of Chemistry II w/lab Prerequisites: CHM 115 and (MTH 122 or MTH 125 or MTH 201)	5 (7)
<b>MTH 122</b> College Algebra Prerequisite: MTH 110 or assignment through Grand Valley math placement	3	<sup>4</sup> <b>MTH 123</b> Trigonometry Prerequisite: MTH 122 or assignment through Grand Valley math placement (MTH 122 may be taken concurrently)	3
Gen Ed	3	<b>WRT 150</b> Strategies in Writing	4
<i>*It is strongly 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>16**</i>
Year Two			
<b>BIO 215</b> Ecology w/lab (summer and fall only) Prerequisites: BIO 120 and BIO 121 (BIO 120 may be taken concurrently)	4 (6)	<b>BIO 210</b> Evolutionary Biology Prerequisites: BIO 120 and BIO 121	3
<b>BMS 208</b> Human Anatomy (BIO elective) Prerequisite: BIO 120	3	<sup>1</sup> <b>CHM 242</b> Organic Chemistry for Life Sciences II w/lab Prerequisite: CHM 241	4 (6)
<sup>1</sup> <b>CHM 241</b> Organic Chemistry for Life Sciences I w/lab Prerequisite: CHM 116	5 (7)	<sup>2</sup> <b>BMS 290</b> Human Physiology (Category II) Prerequisites: BMS 208 and two semesters of chemistry	3
Gen Ed (PSY 101 recommended)	3	<sup>2</sup> <b>BMS 291</b> Lab in Human Physiology (Category II) Prerequisite: BMS 290 or concurrent registration	1 (3)
		<sup>3</sup> MTH Cognate Course	3-4
<i>Total</i>	<i>15</i>	<i>Total</i>	<i>14-15</i>
Year Three			
<b>BIO 375</b> Genetics and <b>BIO 376</b> Genetics Laboratory Prerequisites: BIO 120. Concurrent enrollment in BIO 376 is required	4 (6)	<sup>2</sup> <b>BMS 212</b> Introductory Microbiology (Category V) Prerequisites: BIO 120 and (CHM 230 or CHM 232 or CHM 241)	3
<sup>1,4</sup> <b>CHM 461</b> Biochemistry I Prerequisites: CHM 242, CHM 247 or CHM 248	4	<sup>2</sup> <b>BMS 213</b> Laboratory in Microbiology (Category V) Prerequisite: BMS 212 or concurrent enrollment	1 (4)
<sup>1</sup> <b>PHY 220</b> General Physics I w/lab Prerequisites: MTH 122 and MTH 123	5 (7)	<sup>1</sup> <b>PHY 221</b> General Physics II w/lab Prerequisite: PHY 220	5 (7)
Gen Ed (SOC 101 recommended)	3	Issue	3
		Gen Ed	3
<i>Total</i>	<i>16**</i>	<i>Total</i>	<i>15</i>
Year Four			
<b>CMB 405</b> Cell and Molecular Biology Prerequisites: (BIO 375 or 355), BIO 376, and (CHM 232 or CHM 242 or CHM 247) may be taken concurrently	4	<b>BIO 495</b> Perspectives in Biology (Capstone) Prerequisites: Senior Standing and CMB 405 (may be taken concurrently)	3
<sup>6</sup> <b>CMB 406</b> SWS Cell and Molecular Biology Laboratory Prerequisites: CMB 405 (may be taken concurrently)	2 (4)	<sup>2</sup> Category III or IV BIO Elective Course	3-4
<sup>2</sup> Category I BIO Elective Course	3-4	<sup>5</sup> Elective	3
Issue	3	Gen Ed	3
Gen Ed	3	Gen Ed	3
<i>Total</i>	<i>15-16**</i>	<i>Total</i>	<i>15-16**</i>

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

<sup>1</sup>Students planning on professional or graduate school should complete CHM 241, CHM 242, CHM 461, and PHY 220 and PHY 221. See the Pre-Professional Advisors in the CLAS Academic Advising Center for more information.<sup>2</sup>Students must complete a minimum of 41 credits of Biology coursework. See reverse for required Category elective courses.<sup>3</sup>Choose one of the following to complete the math cognate 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>4</sup>MTH 122/123 are prerequisites for other courses and are not part of the Biology major. MTH 124 and/or MTH 201 will substitute for MTH 122 and MTH 123. CHM 461 is required for pre-professional students but is not part of the Biology major. Students have the option of taking the **Math Proficiency Tests for MTH 122 and/or 123 online: [www.gvsu.edu/s/mv](http://www.gvsu.edu/s/mv)**<sup>5</sup> Elective refers to any course that will help you earn the required 120 credits to graduate.<sup>6</sup> Students must complete a total of two courses with an SWS attribute.

**Declaring the Biology-General Major:**

1. In myBanner, select "Student" > "Student Records" > "Change Major" > "Change Major 1/Program"
2. Choose "Biology-(BA or BS)-General Biology" from the drop-down box.
3. Click "Submit" and then "Change to New Program"
4. Declare "Pre-Professional" as your SECOND MAJOR if you are planning on medical, dental, pharmacy, or optometry school.  
→ If you are Pre-Veterinary, the **Biology with Pre-Veterinary emphasis** is recommended

General Education Categories fulfilled by the Biology major:
Life Science and Physical Science: BIO 120 and CHM 115 (both fulfill lab requirement)
Mathematical Sciences: STA 215, MTH 122, MTH 123, MTH 201

**Students must complete one course from Categories I, II, and V, and one course from either Category III or IV.**

The BIO-General major requires a total of **41 credits** of BIO classes, including certain CMB and BMS courses. Elective courses may only count in one category.

<p><b>Category I: Plant Organismal Biology</b>            BIO 243 Plant Identification &amp; Natural History (3) w/lab  <sup>2</sup>BIO 303 Plant Morphology (4) w/lab  <sup>2</sup>BIO 313 Plants and Islands (4) w/lab  <sup>1</sup>BIO 323 Aquatic and Wetland Plants (3) w/lab  <sup>1</sup>BIO 333 Systematic Botany (4) w/lab  <sup>1</sup>BIO 383 Plant-Fungal Interactions (4) w/lab  <sup>2</sup>BIO 403 Plant Structure and Function (4) w/lab  <sup>2</sup>BIO 413 Freshwater Algae (3) w/lab  <sup>2</sup>BIO 423 Plant Biotechnology (3) w/lab  <sup>1</sup>BIO 433 Plant Ecology (4) w/lab</p> <p><i>Numbers in parentheses indicate # of credits</i>  <sup>1</sup>Offered in Fall semesters only  <sup>2</sup>Offered in Winter semesters only</p>	<p><b>Category II: Animal Organismal Biology</b>            BMS 208+309 Human Anatomy and Lab (4)            BMS 290+291 Human Physiology and Lab (4)</p>	<p><b>Category III: Principles of Ecology and Evolutionary Biology</b>  <sup>2</sup>BIO 303 - Plant Morphology (4) w/lab  <sup>2</sup>BIO 313 - Plants and Islands (4) w/lab  <sup>1</sup>BIO 333 - Systematic Botany (4) w/lab  <sup>1</sup>BIO 349 - The Darwinian Revolution (3)  <sup>2</sup>BIO 352 - Animal Behavior (3) w/lab  <sup>1</sup>BIO 370 - Marine Biology (3)  <sup>1</sup>BIO 433 - Plant Ecology (4) w/lab  <sup>1</sup>BIO 440 - Limnology (4) w/lab  <sup>1</sup>BIO 450 - Stream Ecology (4) w/lab  <sup>1</sup>BIO 452 - Human Evolution (3)            BIO 460 - Terrestrial Ecosystem Ecology (4) w/lab  <sup>2</sup>BIO 473 - Ecology and Evolution of Plant-Animal Interactions (3)  <sup>1</sup>BIO 475 - Population Genetics (3)</p>
<p><b>Category IV: Applied Ecology &amp; Evolution</b>  <sup>2</sup>BIO/NRM 308 - Wildlife Ecology (4) w/lab  <sup>1</sup>BIO 357 - Environmental Microbiology* (4) w/lab  <sup>1</sup>BIO 362 - Fisheries Biology (3) w/lab  <sup>1</sup>BIO 370 - Marine Biology (3)  <sup>1</sup>BIO/NRM 386 - Ecological Restoration &amp; Management (4) w/lab  <sup>2</sup>BIO 402 - Aquatic Insects (3) w/lab            BIO 407 - Biology and Society: Study Abroad (with advisor's permission)  <sup>1</sup>BIO/NRM 408 - Wildlife Management (4) w/lab            BIO 417 - International Field Biology (with advisor's permission)            BIO 418 - Regional Field Biology (with advisor's permission)  <sup>1</sup>BIO 440 - Limnology (4) w/lab  <sup>1</sup>BIO 450 - Stream Ecology (4) w/lab  <sup>1</sup>BIO 470 - Conservation Biology (3)  <sup>2</sup>BIO 473 - Ecology and Evolution of Plant-Animal Interactions (3)  <sup>1</sup>BIO 475 - Population Genetics (3)  <sup>2</sup>BIO/NRM 486 - Advanced Restoration Ecology (3)</p>	<p><b>Category V: Biomolecular Processes</b>            BMS 212 and BMS 213* Introductory Microbiology and Lab (4)</p> <p>*Note: students may count BIO 357 or BMS 212/213 towards the Biology degree, but not both</p>	<p><b>Excluded and Restricted Courses:</b>            The following courses may not count towards the Biology major:            BIO 104 - Biology for the 21<sup>st</sup> Century (4)            BIO 105 - Environmental Science (3)            BIO 107 - Great Lakes &amp; Other Water Resources (4)            BIO 109 - Plants in the World (4)            BIO 205 - Genetics for K-8 Pre-Service Teachers (2)            Any other biology course whose description prevents it from being used in the major.  <i>The following course may only count towards the Biology major with advisor's permission.</i>            BIO 355 - Human Genetics (3)</p> <p>The following courses can satisfy part of Gen Ed <i>Issues</i> requirement and may count towards the Biology major <i>after</i> elective-category requirements are satisfied:            BIO 309 - Plants and Human Health (3)            BIO 311 - Who's Running Your Life: Genes, Evolution and Behavior (3)            BIO 319 - Global Agricultural Sustainability (3)            BIO 328 - Biomedical Ethics (3)            BIO 329 - Evolution of Social Behavior (3)            BIO 338 - Environmental Ethics (3)</p>

**It is imperative to meet with your faculty advisor 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 Pre-Professional 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 Pre-Professional programs, visit [www.gvsu.edu/clasadvising/preprofessional](http://www.gvsu.edu/clasadvising/preprofessional)