

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

¹Students 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.²Students must complete a minimum of 41 credits of Biology coursework. See reverse for required Category elective courses.³Choose 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+123.⁴MTH 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**⁵ Elective refers to any course that will help you earn the required 120 credits to graduate.⁶ 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.

Category I: Plant Organismal Biology BIO 243 Plant Identification & Natural History (3) w/lab ² BIO 303 Plant Morphology (4) w/lab ² BIO 313 Plants and Islands (4) w/lab ¹ BIO 323 Aquatic and Wetland Plants (3) w/lab ¹ BIO 333 Systematic Botany (4) w/lab ¹ BIO 383 Plant-Fungal Interactions (4) w/lab ² BIO 403 Plant Structure and Function (4) w/lab ² BIO 413 Freshwater Algae (3) w/lab ² BIO 423 Plant Biotechnology (3) w/lab ¹ BIO 433 Plant Ecology (4) w/lab <i>Numbers in parentheses indicate # of credits</i> ¹ Offered in Fall semesters only ² Offered in Winter semesters only	Category II: Animal Organismal Biology BMS 208+309 Human Anatomy and Lab (4) BMS 290+291 Human Physiology and Lab (4)	Category III: Principles of Ecology and Evolutionary Biology ² BIO 303 - Plant Morphology (4) w/lab ² BIO 313 - Plants and Islands (4) w/lab ¹ BIO 333 - Systematic Botany (4) w/lab ¹ BIO 349 - The Darwinian Revolution (3) ² BIO 352 - Animal Behavior (3) w/lab ¹ BIO 370 - Marine Biology (3) ¹ BIO 433 - Plant Ecology (4) w/lab ¹ BIO 440 - Limnology (4) w/lab ¹ BIO 450 - Stream Ecology (4) w/lab ¹ BIO 452 - Human Evolution (3) BIO 460 - Terrestrial Ecosystem Ecology (4) w/lab ² BIO 473 - Ecology and Evolution of Plant-Animal Interactions (3) ¹ BIO 475 - Population Genetics (3)
Category IV: Applied Ecology & Evolution ² BIO/NRM 308 - Wildlife Ecology (4) w/lab ¹ BIO 357 - Environmental Microbiology* (4) w/lab ¹ BIO 362 - Fisheries Biology (3) w/lab ¹ BIO 370 - Marine Biology (3) ¹ BIO/NRM 386 - Ecological Restoration & Management (4) w/lab ² BIO 402 - Aquatic Insects (3) w/lab BIO 407 - Biology and Society: Study Abroad (with advisor's permission) ¹ 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) ¹ BIO 440 - Limnology (4) w/lab ¹ BIO 450 - Stream Ecology (4) w/lab ¹ BIO 470 - Conservation Biology (3) ² BIO 473 - Ecology and Evolution of Plant-Animal Interactions (3) ¹ BIO 475 - Population Genetics (3) ² BIO/NRM 486 - Advanced Restoration Ecology (3)	Category V: Biomolecular Processes BMS 212 and BMS 213* Introductory Microbiology and Lab (4) *Note: students may count BIO 357 or BMS 212/213 towards the Biology degree, but not both	Excluded and Restricted Courses: The following courses may not count towards the Biology major: BIO 104 - Biology for the 21 st Century (4) BIO 105 - Environmental Science (3) BIO 107 - Great Lakes & 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) 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)

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-1-140 MAK, 616-331-8585 <http://www.gvsu.edu/clasadvising>

To schedule an appointment with a Biology and/or Pre-Professional Advisor in the CLAS Academic Advising Center, visit www.gvsu.edu/clasadvising and click on "Schedule Appointment"

To find more information on Pre-Professional programs, visit www.gvsu.edu/clasadvising/preprofessional