

Grand Valley State University
CLAS Academic Advising Center
C-1-140 Mackinac Hall
616-331-8585

Graduate Teacher Certification Planned Program
Biology Major – Secondary Education ^{1, 4, 5}

Student Name:

Date:

Email Address:

G#:

Transfer Institution(s):

This planned program is based on the requirements in place for the current catalog year. You are subject to the requirements in place for the academic year when you begin to take classes, either at GVSU or elsewhere, and have eight years to complete all requirements under that specific catalog. If you do take courses elsewhere, you will need to provide GVSU with an official transcript upon completion of the courses. To confirm the courses required for completion of your academic and teaching plans, please contact the CLAS Academic Advising Center at 616-331-8585 or advstu@gvsu.edu.

Key: ✓ - Completed or In Progress W - Waived Highlighted - Still Needs to be Completed

Biology Major – Required Courses

Course Number	✓	Course Name	Credit s	Completed	Scheduled	Grade	Quality Points
BIO 120		General Biology I	4				
BIO 121		General Biology II	4				
BIO 210		Evolutionary Biology	3				
BIO 215		Ecology	4				
BIO 375		Genetics	3				
BIO 376		Genetics Laboratory	1				
CMB 405		Cell and Molecular Biology	4				
CMB 406		Cell and Molecular Biology Lab	2				
BIO 495		Perspectives in Biology	3				
		Biology Category I – Plant Organismal Biology (choose one)					
BIO 243		Plant Identification and Natural History	3				
BIO 303		Plant Morphology	4				
BIO 313		Plants and Islands	4				
BIO 323		Aquatic and Wetlands Plants	3				
BIO 333		Systematic Botany	4				
BIO 403		Plant Structure and Function	4				
BIO 413		Freshwater Algae	3				
BIO 423		Plant Biotechnology	3				
BIO 433		Plant Ecology	4				
		Biology Category II – Animal Organismal Biology (choose one)					
BIO 222		Natural History of Vertebrates	3				
BIO 232		Natural History of Invertebrates	3				
BIO 272		Insect Biology and Diversity	3				
BIO 302		Comparative Vertebrate Anatomy	4				
BIO 342		Ornithology	3				
BIO 362		Fisheries Biology	4				
BIO 402		Aquatic Insects	3				
BIO 412		Mammalogy	4				
BIO 422		Embryology	3				
BIO 432		Comparative Animal Physiology	4				
BMS 208 & 309		Human Anatomy & Laboratory in Human Anatomy	3/1				
BMS 290		Human Physiology & Laboratory in	3/1				

Course Number	✓	Course Name	Credit s	Completed	Scheduled	Grade	Quality Points
& 291		Human Physiology					

	Biology Category III- Principles of Ecology and Evolutionary Biology (Choose 1 from here <u>OR</u> choose 1 from Category IV) BIO 303 BIO 313 BIO 333 BIO 349 BIO 352 BIO 370 BIO 433 BIO 440 BIO 442 BIO 450 BIO 452 BIO 460 BIO 473	Plant Morphology Plants and Islands Systemic Botany The Darwinian Revolution Animal Behavior Marine Biology Plant Ecology Limnology Fish Ecology Stream Ecology Human Evolution Terrestrial Ecosystem Ecology Ecology and Evolution of Plant-Animal Interactions	4 4 4 3 3 3 4 4 3 4 3 4 3				
	Biology Category IV-Applied Ecology and Evolution (Choose 1 from here <u>OR</u> choose 1 from Category III) BIO 308/ NRM 308 BIO 357 BIO 362 BIO 370 BIO 386/ NRM 386 BIO 402 BIO 408/ NRM 408 BIO 440 BIO 450 BIO 470 BIO 473 BIO 486/ NRM 486 BIO 407 BIO 417 BIO 418	Wildlife Ecology Environmental Microbiology* Fisheries Biology Marine Biology Ecological Restoration & Management Aquatic Insects Wildlife Management Limnology Stream Ecology Conservation Biology Ecology and Evolution of Plant-Animal Interactions Advanced Restoration Ecology Biology and Society: Study Abroad International Field Biology Regional Field Biology *Students may count BIO 357 or BMS 212/213 towards the Biology degree, but not both	4 4 3 3 4 3 4 4 4 3 3 3 3				
	Biology Category V-Biomolecular Processes (choose 1) BIO 317 BIO 357 BIO 403 BIO 416 BIO 422 BIO 423 BIO 485 BMS 212 and BMS 213 CMB 351	Animal Nutrition Environmental Microbiology* Plant Structure and Function Advanced Genetics Laboratory Embryology Plant Biotechnology Molecular Ecology Introductory Microbiology and Laboratory in Microbiology Bioinformatics: Tools and Techniques	3 4 4 2 3 3 3 4 3				

CMB 406	for Life Scientists Cellular and Molecular Biology Laboratory (elective for EEB Emphasis only)	2				
CMB 411	Genetics of Development and Cancer	3				
CMB 414	Molecular Biology of the Gene	3				
CMB 426	Nucleic Acids Laboratory	3				
	*Students may count BIO 357 or BMS 212/213 towards the Biology degree but not both					
	Biology Electives Students must complete a minimum of 41 credits of Biology coursework. This includes the Biology core listed previously. Students should select additional courses from the following electives, or from additional plant or animal courses listed previously, or BIO Issues courses, credits in research (BIO 499), or internship credit (BIO 490). Students should consult with a Biology advisor prior to selecting elective courses. Students are allowed to use a maximum of 8 BMS credits towards the Biology electives					
BIO 308*	Wildlife Ecology	4				
BIO 317	Principles of Animal Nutrition	3				
BIO 319	Global Agricultural Sustainability	3				
BIO 325	Human Sexuality	3				
BIO 328	Biomedical Ethics	3				
BIO 329	Evolution of Social Behavior	3				
BIO 338	Environmental Ethics	3				
BIO 349	The Darwinian Revolution	3				
BIO 352	Animal Behavior	3				
BIO 357	Environmental Microbiology	4				
BIO 370	Marine Biology	3				
BIO 386*	Ecological Restoration & Management	4				
BIO 408*	Wildlife Management	4				
BIO 416	Advanced Genetics Laboratory	2				
BIO 440	Limnology	4				
BIO 442	Fish Ecology	3				
BIO 450	Stream Ecology	4				
BIO 452	Human Evolution	3				
BIO 460	Terrestrial Ecosystem Ecology	4				
BIO 470	Conservation Biology	3				
BIO 473	Ecology and Evolution of Plant-Animal Interactions	3				
BIO 485	Molecular Ecology	3				
BIO 486	Advanced Restoration Ecology	3				
BMS 212 & 213	Introductory Microbiology & Laboratory in Microbiology	3/1				
CMB 351	Bioinformatics: Tools and Techniques for Life Scientists	3				
CMB 411	Genetics of Development and Cancer	3				
CMB 414	Molecular Biology of the Gene	3				
CMB 426	Nucleic Acids Laboratory	3				
CHM 115	Principles of Chemistry I	4				
CHM 116	Principles of Chemistry II	5				
CHM 231 ² CHM 241	Introduction to Organic Chemistry OR Organic Chemistry for Life Sciences I	4 5				
CHM 232 ² CHM 242	Biological Chemistry OR Organic Chemistry for Life Sciences II	4 4				
STA 215 MTH 125 MTH 201	Introductory Applied Statistics OR Survey of Calculus OR Calculus I	3 3 4				
PHY 200 ³ PHY 220 PHY 230	Physics for the Life Sciences OR General Physics I OR Principles of Physics I	4 5 5				

Cumulative GPA: _____

Special Considerations:

*These courses may be cross-listed as NRM

¹ BIO 104, 105, 107, 109, 205 are excluded from the major. BIO 309, 310, 311, 329 and 349 may count toward the Biology major after elective-category requirements are satisfied.

² If CHM 231 is chosen, CHM 232 must be taken. If CHM 241 is chosen, CHM 242 must be taken

³ Secondary Education students considering the Integrated Science Secondary Endorsement are encouraged to take both PHY 220 & 221 or PHY 230 & 231.

⁴ Students with a bachelor's degree and a biology major from another institution must earn at least 5 credits in Biology from GVSU.

⁵ **Students must complete a minimum of 41 credits of Biology coursework**

⁶ BIO 407 - Biology and Society: Study Abroad, BIO 417 - International Field Biology, OR BIO 418 - Regional Field Biology possible with Biology Department permission

Notes:

Substitutions, Equivalencies, and Waivers Approved By:

Date:

Prepared By:

Date:

Academic Departmental Approval (Pending Completion of Highlighted Requirements):

Date: