

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 2017-2018. 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	Credits	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	Credits	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		Plant Morphology	4				
BIO 313		Plants and Islands	4				
BIO 333		Systemic Botany	4				
BIO 349		The Darwinian Revolution	3				
BIO 352		Animal Behavior	3				
BIO 370		Marine Biology	3				
BIO 433		Plant Ecology	4				
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 473		Ecology and Evolution of Plant-Animal Interactions	3				
		Biology Category IV-Applied Ecology and Evolution (Choose 1 from here <u>OR</u> choose 1 from Category III)					
BIO 308/ NRM 308		Wildlife Ecology	4				
BIO 357		Environmental Microbiology*	4				
BIO 362		Fisheries Biology	3				
BIO 370		Marine Biology	3				
BIO 386/ NRM 386		Ecological Restoration & Management	4				
BIO 402		Aquatic Insects	3				
BIO 408/ NRM 408		Wildlife Management	4				
BIO 440		Limnology	4				
BIO 450		Stream Ecology	4				
BIO 470		Conservation Biology	3				
BIO 473		Ecology and Evolution of Plant-Animal Interactions	3				
BIO 486/ NRM 486		Advanced Restoration Ecology	3				
BIO 407		Biology and Society: Study Abroad					
BIO 417		International Field Biology					
BIO 418		Regional Field Biology					
		*Students may count BIO 357 or BMS 212/213 towards the Biology degree, but not both					
		Biology Category V-Biomolecular Processes (choose 1)					
BIO 317		Animal Nutrition	3				
BIO 357		Environmental Microbiology*	4				
BIO 403		Plant Structure and Function	4				
BIO 416		Advanced Genetics Laboratory	2				
BIO 422		Embryology	3				
BIO 423		Plant Biotechnology	3				
BIO 485		Molecular Ecology	3				
BMS 212 and BMS 213		Introductory Microbiology and Laboratory in Microbiology	4				
CMB 351		Bioinformatics: Tools and Techniques	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		Introduction to Organic Chemistry OR	4				
CHM 241		Organic Chemistry for Life Sciences I	5				
CHM 232 ²		Biological Chemistry OR	4				
CHM 242		Organic Chemistry for Life Sciences II	4				
STA 215		Introductory Applied Statistics OR	3				
MTH 125		Survey of Calculus OR	3				
MTH 201		Calculus I	4				
PHY 200 ³		Physics for the Life Sciences OR	4				
PHY 220		General Physics I OR	5				
PHY 230		Principles of Physics I	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: