Program Change Request

Date Submitted: 12/05/24 10:51 am

Viewing: SC-BS-BIOL : Biology, BS

Last approved: 04/13/23 3:36 pm

Last edit: 12/11/24 1:21 pm

Changes proposed by: jbazaz

Catalog Pages Using this Program

Biology, BS

Are you completing this form on someone else's behalf?

Yes

Requestor:

In Workflow

1. **BIOL Program Chair**
2. **SC Curriculum Committee**
3. SC Assistant Dean
4. Assoc Provost-Undergraduate
5. Registrar-Programs

Approval Path

1. 12/05/24 11:07 am Geraldine Grant (ggrant1): Approved for BIOL Program Chair

History

1. Oct 23, 2017 by clmig-jwehrheim
2. Dec 5, 2017 by clmig-jwehrheim
3. Mar 1, 2018 by Jennifer Bazaz Gettys (jbazaz)
4. Mar 8, 2018 by rzachari
5. Mar 16, 2018 by rzachari
6. Dec 4, 2018 by Jennifer Bazaz Gettys (jbazaz)
7. Feb 1, 2019 by Jennifer Bazaz Gettys (jbazaz)
8. Mar 4, 2019 by Tory Sarro (vsarro)

9. Jan 16, 2020 by Jennifer Bazaz Gettys (jbazaz)
10. Mar 24, 2020 by Jennifer Bazaz Gettys (jbazaz)
11. Apr 2, 2020 by jriemen
12. Oct 30, 2020 by Tory Sarro (vsarro)
13. Mar 4, 2021 by Jennifer Bazaz Gettys (jbazaz)
14. Oct 1, 2021 by Jennifer Bazaz Gettys (jbazaz)
15. May 10, 2022 by Jennifer Bazaz Gettys (jbazaz)
16. Apr 13, 2023 by Jennifer Bazaz Gettys (jbazaz)

Name	Extension	Email
Val Olmo	1046	volmo

Effective Catalog: 2025-2026

Program Level: Undergraduate

Program Type: Bachelor's

Degree Type: Bachelor of Science

Title: Biology, BS

Banner Title: Biology, BS

Registrar/OAPI Use Only – SCHEV Status Approved

Registrar's Office Use Only – Program Start Term

Registrar/OAPI Use Only – SCHEV Letter

Registrar/OAPI Use Only – SACSCOC Status

Concentration(s):

	Associated Concentrations	Registrar's Office Use Only: Concentration Code
1	Bioinformatics	BNF
2	Biopsychology	BP
3	Biotechnology and Molecular Biology	BTMB
4	Environmental and Conservation Biology	ESCB
5	Microbiology	MIB

Registrar/IRR Use Only – Concentration CIP Code

College/School: College of Science

Department / Academic Unit: Biology

Jointly Owned Program? No

Justification

What: Modifying the core and performing other general clean-up to the concentrations.
Why: To adjust the core in light of recent course updates and to address some issues that keep arising in advising sessions.

What: Adding specific biology elective options.
Why: To aid degree audits.

Total Credits Required: Total credits: minimum 120

Registrar's Office Use Only - Program Code:

SC-BS-BIOL

Registrar/IRR Use Only – Program CIP Code 26.0101 - Biology/Biological Sciences, General.

Admission Requirements:

Admissions

University-wide admissions policies can be found in Undergraduate Admissions Policies.
To apply for this program, please complete the George Mason University Admissions Application.

Program-Specific Policies:

Policies

Students must fulfill all Requirements for Bachelor's Degrees, including the Mason Core.
Important information and departmental policies are listed in the Department of Biology.
BIOL 308 Foundations of Ecology and Evolution (Mason Core) or MLAB 300 Science Writing (Mason Core) meet the writing intensive requirement for this major.
~~BIOL 308 Foundations of Ecology and Evolution (Mason Core) meets the writing intensive requirement for this major. Transfer students who have transferred in BIOL 308 Foundations of Ecology and Evolution (Mason Core) but did not meet the writing intensive requirement may take MLAB 300 Science Writing (Mason Core) to meet the writing intensive requirement.~~
For policies governing all undergraduate degrees, see AP.5 Undergraduate Policies.

Important Program Requirements

- Students may not apply more than 4 ~~8~~ credits of lower-level BIOL prefixed courses (or equivalent transfer credit at the 100 to 200-level) toward the BS without Concentration electives ~~option~~ if taken before the successful completion of BIOL 213 Cell Structure and Function.
- Biology majors must earn a minimum grade of 'C' in all Core Courses under the "Biology Core Courses" header. ~~biology core courses.~~ A grade of 'C' or better must be earned in BIOL 213 Cell Structure and Function in order to advance to other core requirements.
- ~~Students may repeat BIOL 213 Cell Structure and Function once, but a second time only with permission from the Department of Biology.~~
- Students may **not** count BIOL 124 Human Anatomy and Physiology I and/or BIOL 125 Human Anatomy and Physiology II toward any Biology, BS ~~biology major~~ requirement.
- Students ~~who take BIOL 300 BioDiversity~~ may ~~**not**~~ count BIOL 303 Animal Biology and/or BIOL 304 Plant Biology as ~~toward any~~ biology electives. ~~major requirement.~~
- At least 44 credits must be in biology core and elective coursework.
- BIOL 493 Honors Research in Biology, BIOL 495 Directed Studies in Biology, and BIOL 497 Special Problems in Biology do not satisfy the requirements of the BS degree which state that students must complete at least two upper division courses that include a laboratory. The courses do, however, count as non-laboratory electives. ~~The~~

~~total limit for BIOL 493 Honors Research in Biology, BIOL 495 Directed Studies in Biology, and BIOL 497 Special Problems in Biology combined is 6 credits toward the 44 credits required for the BS.~~

- The total limit for BIOL 493 Honors Research in Biology, BIOL 495 Directed Studies in Biology, and BIOL 497 Special Problems in Biology combined is 6 credits toward the 44 credits required for the BS.

Several optional concentrations are available; details on each can be found in the Requirements tab.

Teacher Licensure

Students majoring in biology who wish to pursue a career teaching secondary school may consider applying for the Secondary Education - Biology (6-12) Undergraduate Certificate offered by the College of Education and Human Development as an option in seeking an initial Virginia teaching license.

Other routes to licensure include the Biology, BA or BS/Curriculum and Instruction, Accelerated MEd (Secondary Education Biology Concentration) or select traditional Master's programs. Please contact the College of Education and Human Development for more information.

Degree Requirements:

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Students must complete ~~their biology coursework and~~ the program ~~supporting requirements which follow~~ with a minimum GPA of 2.00.

All students must complete the Biology Core Courses and the Supporting Core Courses listed below. Students then elect to complete the BS degree either with a concentration or without a concentration.

Biology Core Courses

~~**Biology**~~		
BIOL 102	Introductory Biology I-Survey of Biodiversity and Ecology (Mason Core)	4
BIOL 103 & BIOL 105	Introductory Biology II-Survey of Cell and Molecular Biology (Mason Core) and Introductory Biology II Laboratory (Mason Core)	4
BIOL 213	Cell Structure and Function	4
~~BIOL 214~~	~~Biostatistics for Biology Majors~~	~~4~~
~~BIOL 300~~	~~BioDiversity~~	~~4~~
BIOL 308	Foundations of Ecology and Evolution (Mason Core) [1]	4-5
or BIOL 300	BioDiversity	
BIOL 311	General Genetics	4
~~**Chemistry**~~		
~~CHEM 211 & CHEM 213~~	~~General Chemistry I (Mason Core) and General Chemistry Laboratory I (Mason Core)~~	~~4~~

CHEM 212	General Chemistry II (Mason Core)	4
& CHEM 214	and General Chemistry Laboratory II (Mason Core)	
CHEM 313	Organic Chemistry I	5
& CHEM 315	and Organic Chemistry Lab I	
Physics		
Select from one of the following Mason Core Natural Science sequences:		8
PHYS 160	University Physics I (Mason Core)	
& PHYS 161	and University Physics I Laboratory (Mason Core)	
& PHYS 260	and University Physics II (Mason Core)	
& PHYS 261	and University Physics II Laboratory (Mason Core)	
PHYS 243	College Physics I (Mason Core)	
& PHYS 244	and College Physics I Lab (Mason Core)	
& PHYS 245	and College Physics II (Mason Core)	
& PHYS 246	and College Physics II Lab (Mason Core)	
Mathematics		
Select one from the following:		4-6
MATH 111	Linear Mathematical Modeling (Mason Core)	
MATH 113	Analytic Geometry and Calculus I (Mason Core)	
MATH 123	Calculus with Algebra/Trigonometry, Part A	
& MATH 124	and Calculus with Algebra/Trigonometry, Part B (Mason Core)	
Computer Science		
Select one from the following:		3
CDS 130	Computing for Scientists (Mason Core) [2]	
Any course(s) that fulfills the Mason Core: Information Technology requirement		
Total Credits		20-21

[1] Fulfills writing intensive requirement.

[2] Recommended by the Department of Biology.

Supporting Core Courses

Chemistry		
CHEM 211	General Chemistry I (Mason Core)	4
& CHEM 213	and General Chemistry Laboratory I (Mason Core)	

CHEM 212	General Chemistry II (Mason Core)	4
& CHEM 214	and General Chemistry Laboratory II (Mason Core)	
CHEM 313	Organic Chemistry I	5
& CHEM 315	and Organic Chemistry Lab I	
Physics		
Select from one of the following sequences:		8
PHYS 160	University Physics I (Mason Core)	
& PHYS 161	and University Physics I Laboratory (Mason Core)	
& PHYS 260	and University Physics II (Mason Core)	
& PHYS 261	and University Physics II Laboratory (Mason Core)	
PHYS 243	College Physics I (Mason Core)	
& PHYS 244	and College Physics I Lab (Mason Core)	
& PHYS 245	and College Physics II (Mason Core)	
& PHYS 246	and College Physics II Lab (Mason Core)	
Mathematics		
BIOL 214	Biostatistics for Biology Majors	4
Select one from the following: [1]		3-4
MATH 111	Linear Mathematical Modeling (Mason Core)	
MATH 113	Analytic Geometry and Calculus I (Mason Core)	
MATH 123	Calculus with Algebra/Trigonometry, Part A	
& MATH 124	and Calculus with Algebra/Trigonometry, Part B (Mason Core)	
Total Credits		28-29

[1] Students expecting to enter a health professions school or a graduate program are strongly encouraged to complete MATH 113 Analytic Geometry and Calculus I (Mason Core).

BS without Concentration

This program provides a sound liberal arts education with substantial experience in quantitative and analytical thought. The BS without Concentration option provides students with the flexibility to explore and prepare for a career in a wide variety of disciplines, including: teaching, health sciences, environmental management, microbiology, molecular biology, biotechnology, genetics, wildlife management, fisheries biology, and marine science.

Students pursuing the BS without Concentration option must complete the curriculum requirements listed below:

~~Students who do not select an optional concentration must complete the biology core and shared courses shown above in addition to the curriculum requirements listed below.~~

Biology Electives

Select 20 credits from the following: [1]		20
Non-lab Courses		
BIOL 101	Biology Freshman Seminar	
BIOL 177	Introductory Ecology for Environmental Engineers	
BIOL 302	Alternative Careers in Biology	
BIOL 305	Biology of Microorganisms	
BIOL 309	Oceanography	
or EVPP 309	Oceanography	
or GEOL 309	Oceanography	
BIOL 312	Biostatistics for Bioinformatics	
BIOL 318	Conservation Biology	
BIOL 322	Developmental Biology	
BIOL 326	Animal Physiology	
BIOL 331	Invertebrate Zoology	
BIOL 334	Vertebrate Paleontology	
or GEOL 334	Vertebrate Paleontology (Mason Core)	
BIOL 336	Invertebrate Paleontology	
or GEOL 312	Invertebrate Paleontology	
BIOL 344	Plant Diversity and Evolution	
BIOL 345	Plant Ecology	
BIOL 350	Freshwater Ecosystems	
or EVPP 350	Freshwater Ecosystems	
BIOL 377	Applied Ecology	
or EVPP 377	Applied Ecology	
BIOL 382	Introduction to Virology	
BIOL 385	Biotechnology and Genetic Engineering	
BIOL 404	Medical Microbiology	
BIOL 408	Mushrooms, Molds and Society	

or EVPP 408	Mushrooms, Molds and Society
BIOL 412	Phage Genomics
BIOL 413	Histotechniques
BIOL 417	Selected Topics in Molecular and Cellular Biology
BIOL 420	Vaccines
BIOL 421	Genetics of Human Diseases
BIOL 423	Biology of Obesity and Weight Loss
BIOL 425	Human Physiology
BIOL 426	Mechanisms of Aging
BIOL 427	Conservation Medicine
or EVPP 427	Conservation Medicine
BIOL 429	Biological Foundations of Pharmacology
BIOL 432	Clinical Applications in Human Physiology
BIOL 435	Selected Topics in Biology
BIOL 443	Tropical Ecology
BIOL 449	Marine Ecology
BIOL 450	Marine Conservation
BIOL 452	Immunology
BIOL 454	Marine Mammal Biology and Conservation
BIOL 457	Reproductive Strategies
BIOL 460	Infectious Diseases Wildlife
or EVPP 460	Infectious Diseases of Wildlife
BIOL 472	Introductory Animal Behavior
BIOL 482	Introduction to Molecular Genetics
BIOL 483	General Biochemistry
EVPP 419	Marine Mammal Biology and Conservation
EVPP 421	Marine Conservation
EVPP 449	Marine Ecology
EVPP 451	Fungi and Ecosystems

CONS 472	Introduction to Animal Behavior
CONS 480	Primate Behavior, Ecology and Conservation
Upper-level Laboratory Courses	
BIOL 303	Animal Biology
BIOL 304	Plant Biology
BIOL 305 & BIOL 306	Biology of Microorganisms and Biology of Microorganisms Laboratory [2]
BIOL 322 & BIOL 323	Developmental Biology and Environmental Effects on Embryonic Development
BIOL 377 & BIOL 378	Applied Ecology and Applied Ecology Laboratory
BIOL 385 & BIOL 486	Biotechnology and Genetic Engineering and Molecular Biology and Biotechnology Laboratory
BIOL 401	Phage Discovery
BIOL 405	Microbial Genetics
BIOL 407	Microbial Diversity
BIOL 430	Advanced Human Anatomy and Physiology I
BIOL 431	Advanced Human Anatomy and Physiology II
BIOL 437	Ornithology
or EVPP 437	Ornithology
BIOL 438	Mammalogy
or EVPP 438	Mammalogy
BIOL 439	Herpetology
or EVPP 439	Herpetology
BIOL 440	Field Biology
or CONS 440	Ecology Field Skills
BIOL 443 & BIOL 444	Tropical Ecology and Tropical Ecology Laboratory
BIOL 452 & BIOL 453	Immunology and Immunology Laboratory

BIOL 465	Histology	
BIOL 472 & BIOL 473	Introductory Animal Behavior and Introductory Laboratory in Animal Behavior	
BIOL 485	Cell Signaling Laboratory	
EVPP 441	Protist Diversity and Ecology	
CONS 332	Insect Biology	
CONS 402	Applied Conservation	
CONS 404	Biodiversity Monitoring	
CONS 405	Landscape and Macrosystems Ecology	
CONS 406	Small Population Management	
Additional Science Courses		
Students are encouraged to consult with a biology faculty advisor to determine which option (A, B, or C) best meets their career goals. Select one from the following options		3-8
Option A:		
CHEM 314 & CHEM 318	Organic Chemistry II and Organic Chemistry Lab II	
Option B:		
One 3 credit chemistry course at the 300 or 400-level (not CHEM 314)		
Option C:		
GEOL 101 & GEOL 103	Physical Geology (Mason Core) and Physical Geology Lab (Mason Core) (Natural Science courses)	
GEOL 102 & GEOL 104	Historical Geology (Mason Core) and Historical Geology Laboratory (Mason Core)	
Total Credits		23-28

~~Note:~~

~~Students expecting to enter a professional school are strongly encouraged to complete MATH 113 Analytic Geometry and Calculus I (Mason Core).~~

[1] Of which, at least 15 credits must be upper division, and at least two of the upper division courses must include a laboratory.

[2] This lecture and lab combination can be taken together or separately.

Concentration in Bioinformatics (BNF)

The highly interdisciplinary field of bioinformatics has emerged as a powerful modern science. There is a great demand for undergraduate and graduate-level trained individuals with a background in bioinformatics in industry as well as in academia.

Computer Science		**3**
Please note: CDS 130 is the recommended prerequisite for CDS 230 and fulfills the Mason Core Information Technology and Computing requirement.		
CDS 230	Modeling and Simulation I	
Bioinformatics		**6**
BINF 401	Bioinformatics and Computational Biology I	
BINF 402	Bioinformatics and Computational Biology II	
Biology		**14**
BIOL 305 & BIOL 306	Biology of Microorganisms and Biology of Microorganisms Laboratory	
~~BIOL 320~~	~~Comparative Chordate Anatomy~~	
~~BIOL 322 & BIOL 323~~	~~Developmental Biology and Environmental Effects on Embryonic Development~~	
~~BIOL 331~~	~~Invertebrate Zoology~~	
~~BIOL 332~~	~~Insect Biology~~	
~~BIOL 334~~	~~Vertebrate Paleontology~~	
~~BIOL 336~~	~~Invertebrate Paleontology~~	
~~BIOL 344~~	~~Plant Diversity and Evolution~~	
~~BIOL 345~~	~~Plant Ecology~~	
~~BIOL 350~~	~~Freshwater Ecosystems~~	
~~BIOL 355~~	~~Ecological Engineering and Ecosystem Restoration~~	
~~BIOL 379~~	~~RS: Ecological Sustainability (Mason Core)~~	
~~BIOL 385 & BIOL 486~~	~~Biotechnology and Genetic Engineering and Molecular Biology and Biotechnology Laboratory~~	
~~BIOL 405~~	~~Microbial Genetics~~	
~~BIOL 407~~	~~Microbial Diversity~~	

~~BIOL 430~~	~~Advanced Human Anatomy and Physiology I~~
~~BIOL 431~~	~~Advanced Human Anatomy and Physiology II~~
~~BIOL 437~~	~~Ornithology~~
~~BIOL 438~~	~~Mammalogy~~
~~BIOL 439~~	~~Herpetology~~
~~BIOL 452~~ ~~& BIOL 453~~	~~Immunology~~ ~~and Immunology Laboratory~~
~~BIOL 454~~	~~Marine Mammal Biology and Conservation~~
~~BIOL 465~~	~~Histology~~
~~BIOL 468~~	~~Vertebrate Natural History~~
~~BIOL 472~~ ~~& BIOL 473~~	~~Introductory Animal Behavior~~ ~~and Introductory Laboratory in Animal Behavior~~
~~BIOL 484~~ ~~& BIOL 485~~	~~Cell Signaling and Disease~~ ~~and Cell Signaling Laboratory~~
~~BIOL 543~~	~~Tropical Ecosystems~~
BIOL 312	Biostatistics for Bioinformatics
BIOL 401	Phage Discovery
BIOL 412	Phage Genomics
~~Biology Lab Elective~~	
~~Select one from the following:~~	
Additional Science Courses	
Select one from the following options: [1]	3-8
Option A:	
CHEM 314 & CHEM 318	Organic Chemistry II and Organic Chemistry Lab II
~~CHEM 318~~	~~Organic Chemistry Lab II~~
Option B:	
One 3 credit chemistry course at the 300 or 400-level [2]	
Option C:	

GEOL 101 & GEOL 103	Physical Geology (Mason Core) and Physical Geology Lab (Mason Core)	
GEOL 102 & GEOL 104	Historical Geology (Mason Core) and Historical Geology Laboratory (Mason Core)	
Total Credits		26-31

[1] Students are encouraged to consult with a biology advisor to determine which option (A, B, or C) best meets their career goals.

[2] CHEM 314 Organic Chemistry II does not fulfill this requirement.

Concentration in Biopsychology (BP)

The biopsychology concentration consists of a selection of courses designed to address the needs and interest of students who wish to study biology in more depth while simultaneously exploring psychology and neurobiology. This concentration will help prepare students for the MCAT section related to psychology and provide veterinary students with a background in animal learning/behavior.

Biopsychology Courses		
BIOL 430	Advanced Human Anatomy and Physiology I	4
BIOL 431	Advanced Human Anatomy and Physiology II	4
PSYC 372	Biopsychology	3
PSYC 373	Biopsychology Laboratory	2
Additional Psychology/Neuroscience Course		
Select 3-4 credits from the following:		3-4
PSYC 304	Principles of Learning (Mason Core)	
PSYC 376	Brain and Behavior	
PSYC 406	Psychology of Communication (Mason Core)	
NEUR 327	Cellular Neuroscience	
NEUR 335	Developmental and Systems Neuroscience	
Additional Biology Courses		
Select 3-4 credits, not previously taken, from the Biology Electives listed under the BS without Concentration option (above).		3-4
~~BIOL 305~~	~~Biology of Microorganisms~~	
~~BIOL 306~~	~~Biology of Microorganisms Laboratory~~	

~~BIOL 314~~	~~Introduction to Research Design and Analysis~~	
~~BIOL 322~~	~~Developmental Biology~~	
~~BIOL 323~~	~~Environmental Effects on Embryonic Development~~	
~~BIOL 437~~	~~Ornithology~~	
~~BIOL 438~~	~~Mammalogy~~	
~~BIOL 472~~	~~Introductory Animal Behavior~~	
~~BIOL 473~~	~~Introductory Laboratory in Animal Behavior~~	
~~BIOL 483~~	~~General Biochemistry~~	
Additional Chemistry Courses		
Select one from the following options: [1]		3-5
Option A:		
CHEM 314 & CHEM 318	Organic Chemistry II and Organic Chemistry Lab II	
Option B:		
One chemistry course at the 300 or 400-level [2]		
Total Credits		22-26

1 Students are encouraged to consult with a biology faculty advisor to determine which option best meets their career goals.

2 CHEM 314 Organic Chemistry II alone does not fulfill this requirement.

Concentration in Biotechnology and Molecular Biology (BTMB)

The biotechnology and molecular biology concentration consists of a selection of courses that provide essential skills to students who seek employment in the field or wish to include an applied component in their undergraduate training in biology.

Biotechnology Courses		
BIOL 305 & BIOL 306	Biology of Microorganisms and Biology of Microorganisms Laboratory	4
~~BIOL 306~~	~~Biology of Microorganisms Laboratory~~	~~1~~
BIOL 385	Biotechnology and Genetic Engineering	3
BIOL 483	General Biochemistry	4

Additional Biology Courses		
Select 9-10 credits from the following, at least one of the courses must include a laboratory:		9-10
Laboratory Courses:		
~~BIOL 402 & BIOL 403~~	~~Applied and Industrial Microbiology and Techniques in Applied and Industrial Microbiology~~	
BIOL 405	Microbial Genetics	
BIOL 452 & BIOL 453	Immunology and Immunology Laboratory	
BIOL 465	Histology	
BIOL 486	Molecular Biology and Biotechnology Laboratory	
Non-laboratory Courses:		
BIOL 314	Introduction to Research Design and Analysis	
BIOL 382	Introduction to Virology	
BIOL 401	Phage Discovery	
BIOL 411	Advanced General Genetics	
BIOL 412	Phage Genomics	
BIOL 417	Selected Topics in Molecular and Cellular Biology [1]	
BIOL 418	Current Topics in Microbiology [1]	
BIOL 420	Vaccines	
BIOL 421	Genetics of Human Diseases	
BIOL 422	Stem Cell Biology and Regenerative Medicine	
BIOL 482	Introduction to Molecular Genetics	
BIOL 484	Cell Signaling and Disease	
BIOL 497	Special Problems in Biology [1]	
Additional Chemistry Courses		
CHEM 314 & CHEM 318	Organic Chemistry II and Organic Chemistry Lab II	5
~~CHEM 318~~	~~Organic Chemistry Lab II~~	~~2~~
Total Credits		25-26

1

Registration for BIOL 417 Selected Topics in Molecular and Cellular Biology, BIOL 418 Current Topics in Microbiology, or BIOL 497 Special Problems in Biology is subject to approval by the Director of Undergraduate Studies and the Chair of the Department of Biology.

Concentration in Environmental and Conservation Biology (ESCB)

This concentration is offered to students seeking a biology degree that focuses on ecology and organismal biology and prepares them for graduate work or employment in environmental and conservation fields, such as natural resources management, fisheries, forestry, water quality management, aquatic and wetland ecology, and conservation biology. The concentration is staffed and supported by the Department of Environmental Science and Policy.

Environmental and Conservation Biology		
BIOL 318	Conservation Biology	3
BIOL 377	Applied Ecology	3
Biology Electives		
Select 14 credits from the following: [1]		14
BIOL 309	Oceanography	
or EVPP 309	Oceanography	
or GEOL 309	Oceanography	
BIOL 314	Introduction to Research Design and Analysis	
BIOL 326	Animal Physiology	
BIOL 331	Invertebrate Zoology	
BIOL 332	Insect Biology	
BIOL 344	Plant Diversity and Evolution	
BIOL 345	Plant Ecology	
BIOL 350	Freshwater Ecosystems	
or EVPP 350	Freshwater Ecosystems	
BIOL 351	Conservation Seminar	
BIOL 352	Monitoring and Assessment of Biodiversity	
BIOL 355	Ecological Engineering and Ecosystem Restoration	
BIOL 357	Ecology Field Skills	
BIOL 378	Applied Ecology Laboratory	

BIOL 379	RS: Ecological Sustainability (Mason Core)
BIOL 437	Ornithology
or EVPP 437	Ornithology
BIOL 438	Mammalogy
or EVPP 438	Mammalogy
BIOL 439	Herpetology
or EVPP 439	Herpetology
BIOL 440	Field Biology
BIOL 443	Tropical Ecology
BIOL 446	Ecological and Evolutionary Physiology
BIOL 449	Marine Ecology
BIOL 450	Marine Conservation
BIOL 454	Marine Mammal Biology and Conservation
BIOL 457	Reproductive Strategies
BIOL 459	Fungi and Ecosystems
BIOL 468	Vertebrate Natural History
BIOL 472	Introductory Animal Behavior
& BIOL 473	and Introductory Laboratory in Animal Behavior
BIOL 480	The Diversity of Fishes
BIOL 497	Special Problems in Biology [4]

Additional Science Courses

Select one from the following options: [2]	3-8
Option A:	
CHEM 314	Organic Chemistry II
& CHEM 318	and Organic Chemistry Lab II
Option B:	
One chemistry course at the 300 or 400-level [3]	
Option C:	
GEOL 101	Physical Geology (Mason Core)
& GEOL 103	and Physical Geology Lab (Mason Core)

GEOL 102	Historical Geology (Mason Core)	
& GEOL 104	and Historical Geology Laboratory (Mason Core)	
Total Credits		23-28

1 Of which, two courses must be selected from the list above and must have either: 2 laboratory courses or 1 laboratory course and 1 field course (consult with an advisor for guidance).

2 Students are encouraged to consult with a biology faculty advisor to determine which option best meets their career goals.

3 CHEM 314 Organic Chemistry II alone does not fulfill this requirement.

4 Registration in BIOL 497 Special Problems in Biology is subject to approval by the Director of Undergraduate Studies and the Chairman of the Department of Biology.

Concentration in Microbiology (MIB)

This concentration offers lecture and laboratory courses in microbiology to prepare students for employment or advanced study in microbial genetics, physiology, diversity, and related fields.

Microbiology Courses		
BIOL 305	Biology of Microorganisms	4
& BIOL 306	and Biology of Microorganisms Laboratory	
~~BIOL 306~~	~~Biology of Microorganisms Laboratory~~	~~1~~
BIOL 405	Microbial Genetics	4
BIOL 407	Microbial Diversity	4
Biology Electives		
Select 11 credits from the following:		11
BIOL 314	Introduction to Research Design and Analysis	
BIOL 382	Introduction to Virology	
BIOL 385	Biotechnology and Genetic Engineering	
BIOL 401	Phage Discovery	
~~BIOL 402~~	~~Applied and Industrial Microbiology~~	
~~BIOL 403~~	~~Techniques in Applied and Industrial Microbiology~~	
BIOL 404	Medical Microbiology	
BIOL 412	Phage Genomics	
BIOL 418	Current Topics in Microbiology	

BIOL 420	Vaccines	
BIOL 452	Immunology	
BIOL 453	Immunology Laboratory	
BIOL 459	Fungi and Ecosystems	
BIOL 483	General Biochemistry	
Additional Chemistry Courses		
CHEM 314 & CHEM 318	Organic Chemistry II and Organic Chemistry Lab II	5
~~CHEM 318~~	~~Organic Chemistry Lab II~~	~~2~~
Total Credits		28

Retroactive Requirements Updates:

Apply biology elective credit changes to catalog terms fall 2012 onward.

Plan of Study:

Honors Information:

Honors in the Major

Admissions

Minimum requirements for invitation:

- GPA in biology courses must be 3.33 or better
- GPA in supporting requirements (math and other science) must be 3.00 or better
- Grade of 'B' or better in BIOL 213 Cell Structure and Function

Students should apply for admission to the Honors Program during their first or second year at the university. Contact the Department of Biology for information on applying.

Retention Requirements

Students in honors biology must maintain a biology GPA of 3.33 or better and a supporting GPA of 3.00 or better from the time they have accumulated 30 hours and thereafter. Students who fall below this standard will be given a one semester probationary period in which to bring their GPA back up to the minimum standard.

Requirements to Graduate with Biology Honors

Students are required to take 6 to 8 credits in honors courses in BIOL including three semesters of BIOL 494 Honors Seminar in Biology or two semesters of BIOL 494 Honors Seminar in Biology and one semester of BIOL 493 Honors Research in Biology. BIOL 498 Research Seminar may count towards one of the semester requirements of BIOL 494 Honors Seminar in Biology. The GPA requirements are as follows:

- Minimum 3.33 GPA in honors biology courses
- Minimum 3.33 GPA in biology requirements
- Minimum 3.00 GPA in supporting requirements
- Minimum 3.00 GPA overall

Program Outcomes

Additional Program Information

This information is required by the Office of Accreditation and Program Integrity.

Courses offered via distance (if applicable):

What is the primary delivery format for the program?

Face-to-Face Only

Does any portion of this program occur off-campus?

No

Are you working with a vendor / other collaborators to offer your program?

No

Related Departments

Could this program prepare students for any type of professional licensure, in Virginia or elsewhere?

No

Are you adding or removing a licensure component?

No

Additional SCHEV & SACSCOC Information

Is this change a simple retitling of an existing program, with no other changes, to any existing program content, curriculum requirements, etc?

No

Does this change represent a repackaging of content in an existing approved degree/certificate program at the same instructional level (i.e., baccalaureate, master's, or doctoral)?

No

Percentage of total credits containing new course content. ("New course content" is defined by SACSCOC as content that is not currently included in an existing approved degree/certificate program at the same instructiona level. Do not exclude gen ed credits in calculations for undergraduate programs.)

0%-24%

Does this change include the addition of a distance education or face-to-face method of delivery for this program

No

Does this change include the addition of a course/credit-based competency-based education delivery option?

No

Will any additional equipment/facilities be needed?

No

Will any additional faculty be required?

No

Will any additional financial resources be needed?

No

Additional library/learning resources needed?

No

OAPI Use Only – Determination of SACSCOC Impact

Comments or Notes

Green Leaf Program Designation

Is this a Green Leaf program? No

Does this program cover material which crosses into another department?

No

Additional Attachments

SCHEV Proposal

Executive Summary

Reviewer Comments

Additional Comments

Is this course required of all students in this degree program?

%wi_required.eschtml%

Key: 17