



Program Approval Form

For approval of new programs and deletions or modifications to an existing program.

Action Requested:

Create New (SCHEV approval required except for minors)

Inactivate Existing

Modify Existing (check all that apply)

Title (SCHEV approval required except for minors)

Concentration (Choose Add Delete Modify)

Degree Requirements

Admission Standards/ Application Requirements

Other Changes: _____

Type (Check one):

B.A. B.S. Minor

M.A. M.S. M.Ed.

Ph.D.

Undergraduate Certificate*

Graduate Certificate*

Other:

College/School: **Department:**

Submitted by: **Ext:** **Email:**

Effective Term: Fall **Please note:** For students to be admitted to a new degree, minor, certificate or concentration, the program must be fully approved, entered into Banner, and published in the University Catalog.

Justification: (attach separate document if necessary)

Changes in the name of one program concentration and in the core and all concentrations' degree requirements are necessary to better serve our majors with respect to their career interests. In particular, courses that will not be taught in the 2014-2015 academic year are deleted; other options for core requirements and electives that will be available next year are added to provide more appropriate choices.

	Existing	New/Modified
Program Title: (Required) Title must identify subject matter. Do not include name of college/school/dept.	Environmental Science, BS	
Concentration(s):	Aquatic Ecology	Marine, Estuarine, and Freshwater Ecology
Admissions Standards / Application Requirements: (Required only if different from those listed in the University Catalog)		
Degree Requirements: Consult University Catalog for models, attach separate document if necessary using track changes for modifications	See Attached Catalog Copy	See Attached Catalog Copy with track changes showing modifications
Courses offered via distance: (if applicable)		
TOTAL CREDITS REQUIRED:		

*For Certificates Only: Indicate whether students are able to pursue on a Full-time basis Part-time basis

Approval Signatures

Department _____ Date _____ College/School _____ Date _____ Provost's Office _____ Date _____
Required for Minors and Interdisciplinary Programs

If this program may impact another unit or is in collaboration with another unit at Mason, the originating department must circulate this proposal for review by those units and obtain the necessary signatures prior to submission. Failure to do so will delay action on this proposal.

Unit Name	Unit Approval Name	Unit Approver's Signature	Date

For Graduate Programs Only

Graduate Council Member _____ Provost Office _____ Graduate Council Approval Date _____

Environmental Science, BS



Banner Code: SC-BS-EVSC

The BS in environmental science provides students with rigorous training in the fundamental science of the environment, and the application of the key scientific principles to the analysis of environmental processes and problems and to the development of practical responses to those problems. The program covers [ecological systems](#), [environmental policy](#), and the fundamental techniques of environmental science and engineering, protection and improvement of environmental quality, [environmental policy](#), [risk assessment](#) and [risk management](#), and public and private decision-making processes. Graduates of the program are prepared to undertake careers in a variety of environmental science fields, and are also qualified to pursue advanced scientific/professional education.

Comment [ECP1]: Are we covering this somewhere?

Students select a concentration in [aquatic ecology](#), ~~conservation~~, [ecological science](#), [environmental health](#), ~~or~~ human and ecosystem response to climate change, [or marine, estuarine, and freshwater ecology](#). Through the course work below, environmental science majors satisfy the university-wide requirements in natural science, quantitative reasoning, and synthesis. Students can fulfill the writing intensive requirement for this major by taking BIOL 308.

Students must fulfill all requirements for bachelor's degrees including [university general education requirements](#).

For policies governing all undergraduate degrees, see the [Academic Policies](#) section of the catalog.

This has been designated a Green Leaf program. For further information, please go to [Green Leaf Programs and Courses](#).

This program of study is offered by the Department of Environmental Science and Policy in the [College of Science](#).

Degree Requirements

Core Requirements

Environmental Science (36 credits)

- [EVPP 110 - The Ecosphere: An Introduction to Environmental Science I](#) Credits: 4
- [EVPP 111 - The Ecosphere: An Introduction to Environmental Science II](#) Credits: 4
- [or](#)
- [BIOL 213 - Cell Structure and Function](#) Credits: 4
- [PHYS 101 – Light and Sound in Our World](#) Credits: 3
- [and](#)
- [EVPP 305 - Environmental Microbiology Essentials](#) Credits: 3

- [EVPP 306 - Environmental Microbiology Essentials Laboratory Credits: 1](#)
- [EVPP 361 - Introduction to Environmental Policy Credits: 3](#)
- [EVPP 377 - Applied Ecology Credits: 3](#)
- [BIOL 308 - Foundations of Ecology and Evolution Credits: 5](#)
- [EVPP 361 - Introduction to Environmental Policy Credits: 3](#)
- [EVPP 430 - Fundamentals of Environmental Geographic Information Systems Credits: 3](#)
- [BIOL 214 - Biostatistics for Biology Majors Credits: 4](#)
- [BIOL 308 - Foundations of Ecology and Evolution Credits: 5](#)
- and one of the following ~~two~~^{four} courses:
- [EVPP 336 - Human Dimensions of the Environment Credits: 3 *](#)
- or
- [EVPP 337 - Environmental Policy Making in Developing Countries Credits: 3](#)
- or
- [EVPP 338 - Economics of Environmental Policy Credits: 3](#)
- or
- [EVPP 362 - Intermediate Environmental Policy Credits: 3](#)
- and one of the following ~~four~~^{seven synthesis} courses:
- [EVPP 335 - People, Plants, and Culture Credits: 3](#)
- [EVPP 480 - Sustainability in Action Credits: 3](#)
- [PHIL 343 - Topics in Environmental Philosophy Credits: 3](#)
- [GEOL 420 - Earth Science and Policy Credits: 3](#)
- [GGS 303 - Conservation of Resources and Environment Credits: 3](#)
- [GGS 304 - Population Dimensions of Global Change Credits: 3](#)
- [CONS 490 - Integrated Conservation Strategies Credits: 3 **](#)
- [CONS 491 - Comprehensive Conservation Planning Credits: 3 **](#)
- ~~*Students in the Human and Ecosystem Response to Climate Change concentration may not take EVPP 336 to fulfill this portion of the core. They must take EVPP 337 to fulfill this portion of the core.~~
- ~~**These courses are only open to students attending the Smithsonian Semesters~~

Comment [ECP2]: Moved position, not deleted

Comment [ECP3]: Same

Chemistry (8 credits)

- [CHEM 211 - General Chemistry Credits: 4](#)
- [CHEM 212 - General Chemistry Credits: 4](#)

Mathematics (7-8 credits)

- [MATH 113 - Analytic Geometry and Calculus I Credits: 4](#)
- [MATH 114 - Analytic Geometry and Calculus II Credits: 4](#)
- or
- [MATH 111 - Linear Mathematical Modeling Credits: 3](#)
- [MATH 113 - Analytic Geometry and Calculus I Credits: 4](#)

Geology (4 credits)

- [GEOL 404-102 - Introductory Geology I| Credits: 4](#)

Concentrations (24 credits)

Students select a concentration in ~~aquatic ecology, conservation, ecological science, environmental health, human and ecosystem response to climate change,~~ or marine, estuarine, and freshwater ecology. Students take 24 credits of course work as indicated below for the selected concentration.

▲ Concentration in Marine, Estuarine, and Freshwater Aquatic Ecology (AQECMEFE)

Comment [ECP4]: This will be moved to the position of last concentration, following alphabetical order presentation

~~Students must take a minimum of 24 credits from the following:~~

Required courses:

- ~~EVPP 309 - Introduction to Oceanography Credits: 3~~
- EVPP 350 - Freshwater Ecosystems Credits: 4
- EVPP 421 - Marine Conservation Credits: 3
- BIOL 449 - Marine Ecology Credits: 3
- ~~BIOLGEOL 309 - Introduction to Oceanography Credits: 3~~
- ~~BIOL 449 - Marine Ecology Credits: 3~~

Comment [ECP5]: Course proposal for EVPP 309, cross-listed course with GEOL 309, submitted to COS Curriculum Committee

Comment [ECP6]: Will not be taught as BIOL 309 any more, moved position and see note above

Comment [ECP7]: Moved position, not deleted

and at least 11 credits from the following:

- EVPP 318 - Conservation Biology Credits: 3
- EVPP 363 - Coastal Morphology and Processes Credits: 4
- EVPP 380 - Wetlands of the World Credits: 4
- EVPP 395 - Undergraduate Research in Environmental Science and Policy Credits: 1-3
- EVPP 396 - Directed Topic in Environmental Science and Policy Credits: 1-4
- EVPP 419 - Marine Mammal Biology and Conservation Credits: 3
- EVPP 420 - Marine Mammal Biology and Conservation Field Course Credits: 1
- EVPP 427 - Disease Ecology and Conservation Credits: 3
- EVPP 440 - Field Environmental Science Credits: 0-4
- EVPP 490 - Selected Topics in Environmental Science and Policy Credits: 1-4
- EVPP 582 - Estuarine and Coastal Ecology Laboratory Credits: 1
- EVPP 536 - Ichthyology Credits: 4
- ~~BIOL 440 - Field Biology Credits: 0-4~~
- BIOL 331 - Invertebrate Zoology Credits: 4
- BIOL 480 - The Diversity of Fishes Credits: 4
- GEOL 364 - Marine Geology Credits: 3
- GEOL 458 - Chemical Oceanography Credits: 3
- GGS 307 - Sustainable Development Credits: 3
- ~~CLIM 412 - Physical Oceanography Credits: 3~~
- NCLC 318 - Exploring Virginia's Watersheds Credits: 4
- additional courses approved by the program coordinator

Comment [ECP8]: Course proposal has been submitted to COS Curriculum Committee for approval.

Comment [ECP9]: New course approved by COS Curriculum Committee in October 2013.

Comment [ECP10]: Course deleted

Total: 24 credits

▲ Concentration in Conservation (CNSV)

Students must take 24 credits from the following:

- ~~BIOL 310 - Biodiversity Credits: 5~~
- EVPP 318 - Conservation Biology Credits: 3

Comment [ECP11]: Moved position, not deleted

- [EVPP 378 - Ecological Sustainability Credits: 4](#)
- [EVPP 395 - Undergraduate Research in Environmental Science and Policy Credits: 1-3](#)
- [EVPP 396 - Directed Topic in Environmental Science and Policy Credits: 1-4](#)
- [EVPP 419 - Marine Mammal Biology and Conservation Credits: 3](#)
- [EVPP 420 - Marine Mammal Biology and Conservation Field Course Credits: 1](#)
- [EVPP 421 - Marine Conservation Credits: 3](#)
- [EVPP 427 - Disease Ecology and Conservation Credits: 3](#)
- [EVPP 440 - Field Environmental Science Credits: 0-4](#)
- [EVPP 490 - Selected Topics in Environmental Science and Policy Credits: 1-4](#)
- [BIOL 310 - Biodiversity Credits: 5](#)
- [BIOL 435 - Tropical Biology Credits: 3](#)
- [CONS 320 - Conservation in Practice Credits: 3*](#)
- [CONS 401 - Conservation Theory Credits: 3*](#)
- [CONS 402 - Applied Conservation Credits: 4*](#)
- [CONS 403 - Ecology and Conservation Theory Credits: 3*](#)
- [CONS 404 - Monitoring and Assessment of Biodiversity Credits: 4*](#)
- [CONS 410 - Human Dimensions in Conservation Credits: 3*](#)
- [CONS 411 - Science Communication for Conservation Credits: 3*](#)
- [CONS 420 - Human-Wildlife Conflict Credits: 3*](#)
- [CONS 490 - Integrated Conservation Strategies Credits: 3*](#)
- [CONS 491 - Comprehensive Conservation Planning Credits: 3*](#)
- [CONS 497 - Special Topics in Conservation Credits: 1-3*](#)
- [CONS 498 - Internship Credits: 1-3](#)
- [CONS 499 - Independent Study/Research Credits: 1-3](#)
- [GGG 303 - Conservation of Resources and Environment Credits: 3](#)
- [GGG 307 - Sustainable Development Credits: 3](#)
- [NCLC 311 - The Mysteries of Migration: Consequences for Conservation Credits: 6](#)
- [PRLS 300 - People with Nature Credits: 3](#)
- ~~[BIOL 440 - Field Biology Credits: 0-4](#)~~
- ~~[PRLS 402 - Human Behavior in Natural Environments Credits: 3](#)~~
- [*only offered through the Smithsonian-Mason Semester](#)
- additional courses approved by the program coordinator

Comment [ECP12]: Course proposal has been submitted to COS Curriculum Committee for approval.

Comment [ECP13]: New course approved by COS Curriculum Committee in October 2013.

Total: 24 credits

▲ Concentration in Ecological Science (ECSE)

Students must take 24 credits from the following:

- [EVPP 309 - Introduction to Oceanography Credits: 3](#)
- [EVPP 350 - Freshwater Ecosystems Credits: 4](#)
- [EVPP 355 - Ecological Engineering and Ecosystem Restoration Credits: 4](#)
- [EVPP 378 - Ecological Sustainability Credits: 4](#)
- [EVPP 395 - Undergraduate Research in Environmental Science and Policy Credits: 1-3](#)
- [EVPP 396 - Directed Topic in Environmental Science and Policy Credits: 1-4](#)
- [EVPP 408 - Mushrooms, Molds, and Society Credits: 3](#)
- [EVPP 427 - Disease Ecology and Conservation Credits: 3](#)
- [EVPP 440 - Field Environmental Science Credits: 0-4](#)
- [EVPP 490 - Selected Topics in Environmental Science and Policy Credits: 1-4](#)
- ~~[BIOL 309 - Introduction to Oceanography Credits: 3](#)~~
- ~~[BIOL 310 - Biodiversity Credits: 5](#)~~
- ~~[BIOL 345 - Plant Ecology Credits: 4](#)~~
- ~~[BIOL 440 - Field Biology Credits: 0-4](#)~~

Comment [ECP14]: New cross-list course (with GEOL 309) submitted for approval

Comment [ECP15]: Course proposal has been submitted to COS Curriculum Committee for approval.

Comment [ECP16]: New course approved by COS Curriculum Committee in October 2013.

- ~~BIOL 449 - Marine Ecology Credits: 3~~
- ~~BIOL 459 - Fungi and Ecosystems Credits: 3~~
- ~~BIOL 310 - Biodiversity Credits: 5~~
- ~~BIOL 345 - Plant Ecology Credits: 4~~
- ~~BIOL 435 - Tropical Biology Credits: 3~~
- ~~BIOL 440 - Field Biology Credits: 0-4~~
- ~~BIOL 449 - Marine Ecology Credits: 3~~
- ~~BIOL 459 - Fungi and Ecosystems Credits: 3~~
- ~~GEOL 305 - Environmental Geology Credits: 3~~
- ~~GEOL 306 - Soil Science Credits: 3~~
- ~~GEOL 309 - Introduction to Oceanography Credits: 3~~
- ~~GGS 307 - Sustainable Development Credits: 3~~
- additional courses approved by the program coordinator

Comment [ECP17]: Moved position, not deleted

Comment [ECP18]: Will not be taught as BIOL 309 anymore, new cross list course for GEOL 309 proposed, moved position

Total: 24 credits

▲ Concentration in Environmental Health (EVHL)

Required course:

- ~~EVPP 445 - Principles of Environmental Toxicology Credits: 3~~

and 21 credits from the following:

- ~~EVPP 395 - Undergraduate Research in Environmental Science and Policy Credits: 1-3~~
- ~~EVPP 396 - Directed Topic in Environmental Science and Policy Credits: 1-4~~
- ~~EVPP 409 - Medical Mycology Credits: 3~~
- ~~EVPP 427 - Disease Ecology and Conservation Credits: 3~~
- ~~EVPP 440 - Field Environmental Science Credits: 0-4~~
- ~~EVPP 490 - Selected Topics in Environmental Science and Policy Credits: 1-4~~
- ~~EVPP 515 - Molecular Environmental Biology I Credits: 3~~
- ~~BIOL 402 - Applied and Industrial Microbiology Credits: 3~~
- ~~BIOL 404 - Medical Microbiology Credits: 3~~
- ~~BIOL 465 - Histology Credits: 4~~
- ~~CEIE 555 - Principles of Environmental Engineering Credits: 3~~
- ~~CHEM 505 - Hazardous Materials Waste Management Credits: 1-3~~
- ~~GCH 205 - International Health Credits: 3~~
- ~~GCH 360 - Health and Environment Credits: 3~~
- ~~GCH 460 - Program Evaluation Credits: 3~~
- ~~GCH 560 - Environmental Health Credits: 3~~
- ~~GGS 302 - Global Environmental Hazards Credits: 3~~
- ~~GGS 304 - Populations Dimensions of Global Change Credits: 3~~
- ~~GGS 307 - Sustainable Development Credits: 3~~
- ~~GGS 319 - Air Pollution Credits: 3~~
- ~~GGS 322 - Issues in Global Change Credits: 3~~
- ~~and 9 credits from the following:~~
- ~~EVPP 451 - Fungi and Ecosystems Credits: 3~~
- ~~EVPP 515 - Molecular Environmental Biology I Credits: 3~~
- ~~BIOL 402 - Applied and Industrial Microbiology Credits: 3~~
- ~~BIOL 404 - Medical Microbiology Credits: 3~~
- ~~BIOL 465 - Histology Credits: 4~~
- ~~GCH 460 - Program Evaluation Credits: 3~~
- ~~GCH 560 - Environmental Health Credits: 3~~

Comment [ECP19]: Course proposal has been submitted to COS Curriculum Committee for approval.

Comment [ECP20]: New course approved by COS Curriculum Committee in October 2013.

Comment [ECP21]: A different mycology course more appropriate to the concentration is substituted.

- ~~GGG 304 - Populations Dimensions of Global Change Credits: 3~~
- ~~GGG 455 - Environmental Impact Assessment Credits: 3~~
- ~~GGG 540 - Medical Geography Credits: 3~~
- ~~CEIE 555 - Principles of Environmental Engineering Credits: 3~~
- ~~CHEM 505 - Hazardous Materials Waste Management Credits: 1-3~~
- additional courses approved by the program coordinator

Comment [ECP22]: Switched order in list, not deleted.

Comment [ECP23]: Will not be taught 2014-2015.

Comment [ECP24]: Switched order in list, not deleted.

Total: 24 credits

▲ Concentration in Human and Ecosystem Response to Climate Change (HERC)

Required courses:

- ~~CLIM 101 - Global Warming: Weather, Climate, and Society Credits: 3~~
- ~~GGG 121 - Dynamic Atmosphere and Hydrosphere Credits: 4~~
- ~~GGG 302 - Global Environmental Hazards Credits: 3~~
- EVPP 336 - Human Dimensions of the Environment Credits: 3
- ~~CLIM 101 - Global Warming: Weather, Climate, and Society Credits: 3~~
- GGS 121 - Dynamic Atmosphere and Hydrosphere Credits: 4
- and choose either
- GGS 309 - Meteorology and Climate (requires GGS 102, GGS 121) Credits: 3
- or
- GGS 314 - Severe and Extreme Weather (requires MATH 113, GGS 121) Credits: 3

Comment [ECP25]: Moved position, not deleted

Comment [ECP26]: Moved to electives

Also, select **811** credits from the following:

- ~~BIOL 309 - Introduction to Oceanography Credits: 3~~
- ~~CLIM 111 - Introduction to the Fundamentals of Atmospheric Science Credits: 3~~
- ~~CLIM 112 - Introduction to the Fundamentals of Atmospheric Science Lab Credits: 1~~
- EVPP 355 - Ecological Engineering and Ecosystem Restoration Credits: 4
- EVPP 378 - Ecological Sustainability Credits: 4
- EVPP 395 - Undergraduate Research in Environmental Science and Policy Credits: 1-3
- EVPP 396 - Directed Topic in Environmental Science and Policy Credits: 1-4
- ~~EVPP 427 - Disease Ecology and Conservation Credits: 3~~
- EVPP 436 - The Human Dimensions of Global Climate Change Credits: 3
- ~~EVPP 440 - Field Environmental Science Credits: 0-4~~
- EVPP 490 - Selected Topics in Environmental Science and Policy Credits: 1-4
- BIOL 309 - Introduction to Oceanography Credits: 3
- CLIM 111 - Introduction to the Fundamentals of Atmospheric Science Credits: 3
- CLIM 112 - Introduction to the Fundamentals of Atmospheric Science Lab Credits: 1
- GGS 302 - Global Environmental Hazards Credits: 3
- GGS 304 - Populations Dimensions of Global Change Credits: 3
- GGS 307 - Sustainable Development Credits: 3
- GGS 319 - Air Pollution Credits: 3
- GGS 312 - Physical Climatology Credits: 3
- GGS 321 - Biogeography: Space, Time and Life Credits: 3
- GGS 322 - Issues in Global Change Credits: 3
- GGS 353 - Observations of the Earth and its Climate Credits: 3
- GGS 354 - Data Analysis and Global Change Detection Techniques Credits: 3
- GGS 456 - Introduction to Atmospheric Radiation
- additional courses approved by the program coordinator

Comment [ECP27]: Moved position, not deleted

Comment [ECP28]: Course proposal has been submitted to COS Curriculum Committee for approval.

Comment [ECP29]: New course approved by COS Curriculum Committee in October 2013.

Total: 24 credits

