Program Approval Form

GEORGE MASON UNIVERSITY

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

Registrar.

Action Requested:

[ ]	Create New (SCHEV approval required except for concentration, minors, and certificates)
[ ]	Delete Existing
[x]	Modify Existing (check all that apply)

- [ ] Title (SCHEV approval required except for concentration, minors, certificates)
- [x] Degree Requirements   [ ] Admission Standards
- [ ] Application Requirements
- [ ] Other Changes:

Type (Check one):

- [ ] B.A.   [x] B.S.   [ ] Minor
- [ ] Undergraduate Certificate
- [ ] M.A.   [ ] M.S.   [ ] M.Ed.
- [ ] Ph.D.   [ ] Graduate Certificate
- [x] Concentration
- [ ] Other:

College/School: College of Science   **Department:** Biology Program

Submitted by: Larry Rockwood   **Ext:** 3-1031   **Email:** lrockwoo@gmu.edu

Effective Term: Fall 2011   **Please note:** For students to start 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)

These changes reflect the new core requirements in the Biology BS degree

	Existing	New/Modified
Program Title: (Required) Use title to identify subject matter. Do not include name of college/school or department.	Biology BS	Biology BS
Concentration Title(s):	**Concentration in Environmental and Conservation Biology (ESCB)**	**Concentration in Environmental and Conservation Biology (ESCB)**
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	See attached
Courses offered via Distance: (if applicable)		
TOTAL CREDITS REQUIRED:		

Approval Signatures

Department	Date	College/School	Date	Provost's Office	Date
				Required for Undergraduate Programs Only	

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

▲ 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.

Students must fulfill all requirements for bachelor's degrees including university general education requirements . In addition, students seeking the concentration in environmental and conservation biology must complete the following. Through the course work below, they satisfy the university-wide general education requirements in natural science, quantitative reasoning, and information technology proficiency.

22 credits of biology core courses:

- BIOL 213 - Cell Structure and Function Credits: 4
- BIOL 214 - Introduction to Biostatistics Credits: 4
- BIOL 311 - General Genetics Credits: 4
- BIOL 308 - Foundations of Ecology and Evolution Credits: 5
- BIOL 310 - Biodiversity Credits: 5

6 credits in environmental and conservation biology, including:
- BIOL 377 - Applied Ecology Credits: 3
- BIOL 318 - Conservation Biology Credits: 3

3-4 credits in field biology

- BIOL 345 - Plant Ecology Credits: 4

or
- BIOL 350 - Freshwater Ecosystems Credits: 4

or
- BIOL 468 – Vertebrate Natural History Credits: 4

or
- One 3-4-credit field course approved by the Biology Program Director

12-13 additional credits in Biology. Two courses must be selected from the list below, and one of these courses must include a laboratory.

- BIOL 309 - Introduction to Oceanography
- 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*
- BIOL 355 - Ecological Engineering and Ecosystem Restoration
- BIOL 440 - Field Biology
- BIOL 449 - Marine Ecology
- BIOL 450 - Marine Conservation
- BIOL 454 - Marine Mammal Biology and Conservation
- BIOL 455 –Marine Mammal Biology and Conservation Laboratory
- BIOL459 - Fungi and Ecosystems
- BIOL 468 – Vertebrate Natural History*
- BIOL 472 - Introductory Animal Behavior
- BIOL 473 - Introductory Animal Behavior Lab

Note:

*If not used for field course requirement.

13 credits of chemistry:

- CHEM 211 - General Chemistry Credits: 4
- CHEM 212 - General Chemistry Credits: 4
- CHEM 313 - Organic Chemistry Credits: 3
- CHEM 315 - Organic Chemistry Lab I Credits: 2

One of the following options (3-8 credits):

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

Option A

- CHEM 314 - Organic Chemistry Credits: 3

and

- CHEM 318 - Organic Chemistry Lab II Credits: 2

Option B

- One chemistry course at the 300 or 400 level (3) (not CHEM 314)

Option C

- GEOL 101 - Introductory Geology I Credits: 4

and

- GEOL 102 - Introductory Geology II Credits: 4

8 credits of physics:

- [PHYS 243 - College Physics](#) Credits: 3
- [PHYS 244 - College Physics Lab](#) Credits: 1
- [PHYS 245 - College Physics](#) Credits: 3
- [PHYS 246 - College Physics Lab](#) Credits: 1

3-4 credits of Mathematics chosen from:

- MATH 108 Introductory Calculus with Business Applications Credits: 3 (transfer students only)
- [MATH 111 - Linear Mathematical Modeling](#) Credits: 3
- [MATH 113 - Analytic Geometry and Calculus I](#) Credits: 4
- [MATH 114 - Analytic Geometry and Calculus II](#) Credits: 4

3 credits of computer science chosen from one of the following:

- CDS 130 – Computing for Scientists Credits: 3
- [IT 103 - Introduction to Computing](#) Credits: 3