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
- [x] Modify Existing (check all that apply)
  - [ ] Title (SCHEV approval required except for minors)
  - [ ] **Concentration** (Choose one): [ ] *Add* [ ] *Delete* [ ] *Modify*
  - [x] Degree Requirements
  - [ ] Admission Standards/ Application Requirements
  - [ ] Other Changes: _____

Type (Check one)**:**

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

College/School:	College of Science	**Department:**	GGS		
Submitted by:	Jen Gettys	**Ext:**	3.5302	**Email:**	jbazaz@gmu.edu

Effective Term: Fall 2015

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)

Adding "Mason Core and Elective Credits" and "Mason Core" sections in order to have the catalog listing clearly show how the degree equals 120 credits and how the Mason Core requirements can be fulfilled.

	Existing	New/Modified
Program Title: (Required) Title must identify subject matter. Do not include name of college/school/dept.	Global and Environmental Change, BS	
Concentration(s):		
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	[Mason Core and Electives section not included]	See the bottom portion of the degree listing attached.
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

For Registrar Office's Use Only: Received_____Banner_____Catalog_____

revised 6/7/12

Program Proposal Submitted to the College of Science Curriculum Committee (COSCC)

The form above is processed by the Office of the University Registrar. This second page is for the COSCC's reference. Please complete the applicable portions of this page to clearly communicate what the form above is requesting.

FOR ALL PROGRAMS (required)

Program Title: Global and Environmental Change, BS

Date of Departmental Approval: 3/11/2015

FOR INACTIVATED PROGRAMS (required if inactivating a program)

- Reason for Inactivation:

FOR MODIFIED PROGRAMS (required if modifying a program)

- Summary of the Modification: Adding "Mason Core and Elective Credits" and "Mason Core" sections.
- Text before Modification (title, degree requirements, etc.): Sections weren't included.
- Text after Modification (title, degree requirements, etc.): See attached.
- Reason for the Modification: In order to have the catalog listing clearly show how the degree equals 120 credits and how the Mason Core requirements can be fulfilled.

FOR NEW PROGRAMS (required if creating a new program)

- Reason for the New Program:
- Relationship to Existing Programs:
- Relationship to Existing Courses:
- Semester of Initial Offering:
- Insert Tentative SCHEV Proposal Below

Acalog ACMS™ 2015-2016 University Catalog {working}

Global and Environmental Change, BS

Banner Code: SC-BS-GLEC

This program of study is offered by the Department of Geography and Geoinformation Science in the College of Science.

This interdisciplinary undergraduate program is one of the first of its kind in the nation. It distinguishes itself from other degrees in the natural sciences by examining local, regional, and global scales to better understand the dynamics of the Earth's systems (the geosphere, the atmosphere, the ecosphere, the sociosphere) and their interactions. In addition, it emphasizes the dynamic and changing Earth systems and the use of Earth observing and remote sensing and related geoinformation technologies in detecting changes. It is jointly offered with the Department of Environmental Science and Policy.

In meeting the requirements for this major, students choose a focus in environmental change (i.e. impacts of sea level rise on the Chesapeake Bay) or global change (i.e. global causes of sea level and detection).

Students must fulfill all requirements for bachelor's degrees including the Mason Core. Through the coursework listed below, Global and Environmental Change, BS majors satisfy Mason Core requirements in 'Natural Science', 'Quantitative Reasoning', 'Information Technology', 'Global Understanding', 'Social and Behavioral Science', and 'Synthesis'.

GGS 304 meets the writing intensive requirement for this major.

This has been designated a Green Leaf program. For further information, please go to Green Leaf Programs and Courses.

Degree Requirements

Two Required Ecosphere Core Courses (8 credits)

Students take either the GGS sequence:

- GGS 121 - Dynamic Atmosphere and Hydrosphere Credits: 4 (Mason Core: Natural Science course)
- GGS 122 - Dynamic Geosphere and Ecosphere Credits: 4

Or the EVPP sequence:

- EVPP 110 - The Ecosphere: An Introduction to Environmental Science I Credits: 4 (Mason Core: Natural Science course)
- EVPP 111 - The Ecosphere: An Introduction to Environmental Science II Credits: 4 (Mason Core: Natural Science course)

Four Required Core Courses in Global and Environmental Change (12-13 credits)

- GGS 300 - Quantitative Methods for Geographical Analysis Credits: 3 **or** BIOL 312 - Biostatistics Credits: 4

- GGS 302 - Global Environmental Hazards Credits: 3 **or** GGS 305 - Economic Geography Credits: 3
- GGS 304 - Populations Dimensions of Global Change Credits: 3 (fulfills the writing intensive requirement and is a Mason Core: Synthesis course)
- GGS 353 - Observations of the Earth and its Climate Credits: 3

Four Required Courses in Geosphere and Atmosphere (13-15 credits)

Choose from two options (Mason Core: Natural Science courses):

- GEOL 101 - Introductory Geology I Credits: 4

  Or the sequence:
- PHYS 243 - College Physics Credits: 3 **and** PHYS 244 - College Physics Lab Credits: 1

Plus 3 Courses From:

- GGS 309 - Meteorology and Climate Credits: 3
- GGS 312 - Physical Climatology Credits: 3
- GGS 314 - Severe and Extreme Weather Credits: 3
- GGS 319 - Air Pollution Credits: 3
- GGS 399 - Selected Topics in Geography Credits: 3
- GEOL 306 - Soil Science Credits: 3
- GEOL 309 - Introduction to Oceanography Credits: 3
- GEOL 317 - Geomorphology Credits: 4
- EVPP 490 - Special Topics in Environmental Science and Policy Credits: 0-4

Four Required Courses in Ecosphere and Sociosphere (12-13 credits)

- EVPP 377 - Applied Ecology Credits: 3 **or** GGS 321 - Biogeography: Space, Time and Life Credits: 3
- GGS 101 - Major World Regions Credits: 3 **or** GLOA 101 - Introduction to Global Affairs Credits: 3 **or** CEIE 100 - Environmental Engineering around the World Credits: 3 (Mason Core: Global Understanding courses)
- GGS 103 - Human Geography Credits: 3 **or** ANTH 135 - Introduction to Biological Anthropology Credits: 3 (Mason Core: Social and Behavioral Science courses)

  And one course from the following:
- BIOL 318 - Conservation Biology Credits: 3
- BIOL 345 - Plant Ecology Credits: 4
- BIOL 449 - Marine Ecology Credits: 3
- GGS 303 - Conservation of Resources and Environment Credits: 3
- GGS 307 - Sustainable Development Credits: 3
- GGS 322 - Issues in Global Change Credits: 3
- EVPP 336 - Human Dimensions of the Environment Credits: 3
- EVPP 337 - Environmental Policy Making in Developing Countries Credits: 3
- EVPP 350 - Freshwater Ecosystems Credits: 4

Two Required Courses in Applications and Techniques of Detecting Global Change (6 credits)

Choose two from:

- GGS 311 - Introduction to Geographic Information Systems Credits: 3
- GGS 354 - Data Analysis and Global Change Detection Techniques Credits: 3
- GGS 410 - Introduction to Hyperspectral Imaging Credits: 3
- GGS 455 - Environmental Impact Assessment Credits: 3
- GGS 495 - Senior Research in Global and Environmental Change Credits: 3
- GGS 412 - Air Photography Interpretation Credits: 3
- GGS 416 - Satellite Image Analysis Credits: 3
- GGS 463 - Applied Geographic Information Systems Credits: 3
- GEOL 303 - Field Mapping Techniques Credits: 3

One Supporting Science Sequence Beyond Mason Core Requirements (8 credits)

Choose one of these 8-credit Mason Core: Natural Science course sequences:

- BIOL 103 - Introductory Biology I Credits: 4 **and** BIOL 104 - Introductory Biology II Credits: 4
- CHEM 211 - General Chemistry Credits: 4 **and** CHEM 212 - General Chemistry Credits: 4
- GEOL 101 - Introductory Geology I Credits: 4 **and** GEOL 102 - Introductory Geology II Credits: 4

  Or
- ASTR 111 - Introductory Astronomy: The Solar System Credits: 3 **and** ASTR 112 - Introductory Astronomy Lab: The Solar System Credits: 1
- ASTR 113 - Introductory Astronomy: Stars, Galaxies, and the Universe Credits: 3 **and** ASTR 114 - Introductory Astronomy Lab: Stars, Galaxies, and the Universe Credits: 1

  Or
- PHYS 243 - College Physics Credits: 3 **and** PHYS 244 - College Physics Lab Credits: 1
- PHYS 245 - College Physics Credits: 3 **and** PHYS 246 - College Physics Lab Credits: 1

Four Required Supporting Mathematics and IT Courses (14 credits)

- MATH 113 - Analytic Geometry and Calculus I Credits: 4 (Mason Core: Quantitative Reasoning course)
- MATH 114 - Analytic Geometry and Calculus II Credits: 4
- IT 104 - Introduction to Computing Credits: 3 (Mason Core: Information Technology course)
- STAT 250 - Introductory Statistics I Credits: 3 (Mason Core: Quantitative Reasoning course)

General Electives

- Students choose 27-31 additional credits in consultation with their advisor.

Mason Core and Elective Credits (12-20 credits)

These 12-20 credits are available to fulfill any remaining Mason Core requirements (outlined below). Once those and all requirements for bachelor's degrees are met, any remaining credits may be completed by elective courses. Students are strongly encouraged to consult with their advisor to ensure that they fulfill all requirements.

Mason Core

Please note that some Mason Core requirements may already be fulfilled by the major requirements listed above.

Expand each item below for a link to specific course lists for each category:

Foundation Requirements (15-19 credits)

- Mason Core UWCU - Written Communication Credits: 6
- Mason Core UOC - Oral Communication Credits: 3
- Mason Core UQR - Quantitative Reasoning Credits: 3
- Mason Core UITC - Information Technology Credits: 3-7

Core Requirements (22 credits)

- Mason Core UFA - Arts Credits: 3
- Mason Core UGU - Global Understanding Credits: 3
- Mason Core ULIT - Literature Credits: 3
- Mason Core UNSL - Natural Science Credits: 7
- Mason Core USBS - Social and Behavioral Sciences Credits: 3
- Mason Core UWC - Western Civilization/Western History Credits: 3

Synthesis/Capstone Requirement (minimum 3 credits)

- Mason Core USYN - Synthesis/Capstone Credits: minimum 3

Degree Total: Minimum 120 credits