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)
  - [X] **Concentration** (Choose one): [X] *Add* [ ] *Delete* [ ] *Modify*
  - [ ] 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:**	Atmospheric, Oceanic, and Earth Sciences		
Submitted by:	Mark D. Uhen	**Ext:**	3-5264	**Email:**	muhen@gmu.edu

Effective Term: Fall 2016

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)

A recent program review noted that the Mason Geology Program has 3 paleontologists (1 tenure stream, 2 term) and that there is significant demand for programs in paleontology across the US. Given these strengths, we would like to leverage existing teaching power and courses to offer a concentration in Paleontology within the existing Earth Science B.S. program.

	Existing	New/Modified
Program Title: (Required) Title must identify subject matter. Do not include name of college/school/dept.	Earth Science	Earth Science
Concentration(s):	Earth and Surface Processes, Environmental Geoscience, Geology, Earth Science Education, Oceanography and Estuarine Science	Add Paleontology
Admissions Standards / Application Requirements: (Required only if different from those listed in the University Catalog)	Same as catalog	Same as catalog
Degree Requirements: Consult University Catalog for models, attach separate document if necessary using track changes for modifications	As in the current catalog	See attached
Courses offered via distance: (if applicable)	None	None
TOTAL CREDITS REQUIRED:	Depends upon concentration	36-39 credits

***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: Earth Science, BS

Date of Departmental Approval: April 3, 2015

FOR MODIFIED PROGRAMS (required if modifying a program)

- **Summary of the Modification**: Addition of a Paleontology Concentration to the Earth Science, BS

- **Reason for the Modification**: A recent program review noted that the Mason Geology Program has 3 paleontologists (1 tenure stream, 2 term) and that there is significant demand for programs in paleontology across the US. Given these strengths, we would like to leverage existing teaching power and courses to offer a concentration in Paleontology within the existing Earth Science B.S. program.

- **Text before Modification** : Same for the Earth Science, BS

- **Text after Modification** : See following page for additional section added to Earth Science BS requirements:

Paleontology Concentration (PAL)

This concentration focuses on a broad understanding of the earth history and the evolution of life on earth as revealed through the fossil record. Fundamental concepts, methods and techniques of historical geology and paleontological data and analysis are also examined. At least 36 credits are required as follows:

BIOL 103 or 213 – Introductory Biology I or Cell Structure and Function Credits: 4
GEOL 102 – Introductory Geology II Credits: 4
GEOL 302 – Mineralogy Credits: 4
GEOL 304 – Sedimentary Geology Credits: 4*
GEOL 312 – Invertebrate Paleontology Credits: 4
GEOL 334 – Vertebrate Paleontology: Credits 4 (Writing Intensive)
* Requires C or better in GEOL 302

<u>At least 9 credits from the following list:</u>
GEOL 306 – Soil Science Credits 3
GEOL 317 – Geomorphology Credits: 4
GEOL 332 – Paleoclimatology Credits: 3
GEOL 364 – Marine Geology Credits: 3
GEOL 403 – Geochemistry Credits: 3
GEOL 412 – Physical Oceanography Credits: 3
GEOL 458 – Chemical Oceanography Credits: 3
GEOL 565 – Paleoceanography Credits: 3

<u>At least 3 credits from the following list:</u>
BIOL 310 – Biodiversity Credits: 3†
BIOL 330 – Biodiversity Lab Credits: 2†
BIOL 320 – Comparative Chordate Anatomy Credits: 4
BIOL 331 – Invertebrate Zoology
BIOL 468 or EVPP 468 – Vertebrate Natural History Credits: 4
BIOL 470 – Dinosaur Biology Credits: 3
BIOL 471 – Evolution Credits: 3
GGS 321 or BIOL 374 – Biogeography: Space, Time, and Life Credits: 3
†These two courses must be taken together.

Total: 36-39 credits

For reference, here are the degree requirements common to all concentrations (not including Mason-wide requirements):

Degree Requirements

32-33 Credits of Core Science and Mathematics

- GEOL 101 - Introductory Geology I Credits: 4 (Mason Core: Natural Science course)
- GEOL 309 - Introduction to Oceanography Credits: 3 **or**

  BIOL 309 - Introduction to Oceanography Credits: 3

- GEOL 406 - Seminar in Earth and Environmental Science Credits: 3 **or**

  GEOL 420 - Earth Science and Policy Credits: 3

- CHEM 211 - General Chemistry Credits: 4 (Mason Core: Natural Science course)
- CHEM 212 - General Chemistry Credits: 4 (Mason Core: Natural Science course)
- MATH 113 - Analytic Geometry and Calculus I Credits: 4 (Mason Core: Quantitative Reasoning course)
- MATH 114 - Analytic Geometry and Calculus II Credits: 4
- STAT 250 - Introductory Statistics I Credits: 3 (Mason Core: Quantitative Reasoning course)

Choose one of the following options:

- **Option A** (Mason Core: Natural Science courses)
- CLIM 111 - Introduction to the Fundamentals of Atmospheric Science Credits: 3
- CLIM 112 - Introduction to the Fundamentals of Atmospheric Science Lab Credits: 1
-

  Option B (Mason Core: Natural Science courses)

- PHYS 111 - Introduction to the Fundamentals of Atmospheric Science Credits: 3
- PHYS 112 - Introduction to the Fundamentals of Atmospheric Science Lab Credits: 1
-

  Option C

- GGS 309 - Meteorology and Climate Credits: 3

8 Credits of Physics

Choose one 8-credit sequence from the following Mason Core: Natural Science courses, either:

- PHYS 160 - University Physics I Credits: 3
- PHYS 161 - University Physics I Laboratory Credits: 1
- PHYS 260 - University Physics II Credits: 3
- PHYS 261 - University Physics II Laboratory Credits: 1
- **Or**
- 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