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Dean's Office

College of Natural Science & Mathematics

PROGRAM/DEGREE REQUIREMENT CHANGE (MAJOR)

**SUBMITTED BY:**

|               |  |                 |              |
|---------------|--|-----------------|--------------|
| Department    | Geosciences  | College/School  | CNSM         |
| Prepared by   | Sarah Fowell   | Phone           | x7810        |
| Email Contact | <a href="mailto:sjfowell@alaska.edu">sjfowell@alaska.edu</a> | Faculty Contact | Sarah Fowell |

See <http://www.uaf.edu/uafgov/faculty-senate/curriculum/course-degree-procedures/> for a complete description of the rules governing curriculum & course changes.

**PROGRAM IDENTIFICATION:**

|  |                  |
|--|------------------|
| DEGREE PROGRAM   | Earth Science BA |
| Degree Level: (i.e., Certificate, A.A., A.A.S., B.A., B.S., M.A., M.S., Ph.D.) | BA               |

**A. CHANGE IN DEGREE REQUIREMENTS: (Brief statement of program/degree changes and objectives)**

Adds capstone requirement to the 3 different Earth Science BA options. Also corrects a typo and removes two courses (Geos 222 and Geog 402) that are no longer offered. Finally, redistributes some requirements into BA or GE.

**B. CURRENT REQUIREMENTS AS IT APPEARS IN THE CATALOG:**

Major -- B.A. Degree

1. Complete the [general university requirements](#). (As part of the core curriculum requirements, complete: NRM F303X\*, CHEM F103X and CHEM F104X or CHEM F105X and CHEM F106X or PHYS F103X and PHYS F104X).
2. Complete the [B.A. degree requirements](#). (Note that social science (s) courses are included in each of the concentrations. These courses may also be applied to the B.A. degree requirements).
3. Complete the following foundation courses:\*
  - GEOS F101X--The Dynamic Earth (4)
    - or GEOS F120X--Glaciers, Earthquakes and Volcanoes (4)--4 credits
    - GEOS F112X--The History of Earth and Life (4)
      - or GEOS F106X--Life in the Age of Dinosaurs(4)--4 credits
4. Complete one of the following concentrations:

**Earth Systems Science**

- a. Complete the following:\*
  - GEOS F304--Geomorphology--3 credits
  - GEOS F315W--Paleobiology and Paleontology--4 credits
- b. Complete one course from each of the following areas:\*
  - Earth Systems**
    - GEOG F101--Expedition Earth: Introduction to Geography--3 credits
    - MSL F111X--The Oceans--4 credits
    - NRM F101--Natural Resource Conservation Policy--3 credits
    - PHYS F175X--Introduction to Astronomy--4 credits
  - Earth Materials**
    - GEOS F213--Mineralogy--4 credits
    - GEOS F262--Rocks and Minerals--3 credits
  - Geospatial Sciences**
    - GEOG F338--Introduction to Geographic Information Systems--3 credits
    - GEOS F222--Fundamentals of Geospatial Sciences--3 credits
    - GEOS F225--Field and Computer Methods in Geology (2)
      - and GEOS F408--Photogeology (2)--4 credits
- c. Complete one course from any two of the following areas:\*
  - Weather and Climate**
    - ATM F101X--Weather and Climate of Alaska--4 credits
    - GEOG F307--Weather and Climate--3 credits

### **Natural Resources**

GEOG F302--Geography of Alaska--3 credits

GEOG F402--Resources and Environment--3 credits

### **Geoscience**

GEOS F309--Tectonics--3 credits

GEOS F322--Stratigraphy and Sedimentation--4 credits

### **Geobiology**

GEOS F485--Mass Extinctions, Neocatastrophism, and the History of Life--3 credits

GEOS F486--Vertebrate Paleontology--3 credits

d. Complete 9 additional credits at the F300 level or above with an emphasis in geology, geography, biology, natural resources management or other earth science-related field as approved by the undergraduate advisor, including one W (writing-intensive) course and one O (oral-intensive) course.--9 credits

e. Complete any UAF minor. Courses used to satisfy the upper-division emphasis may also be applied towards the requirements for a minor.

f. Minimum credits required--120 credits

### **Geological Hazards and Mitigation**

a. As part of the core curriculum requirements, complete SOC F100X and COMM F300X.

b. Complete the following:\*

ED F486W,O--Media Literacy--3 credits

ENGL F314W,O/2--Technical Writing--3 credits

GEOS F304--Geomorphology--3 credits

GEOS F380--Geological Hazards--3 credits

GEOS F406--Volcanology--3 credits

HSEM F301--Principles of Emergency Management and Homeland Security--3 credits

PHYS F175X--Introduction to Astronomy--4 credits

STAT F200X--Elementary Probability and Statistics--3 credits

c. Complete one course from each of the following areas:\*

### **Earth Materials**

GEOS F213--Mineralogy--4 credits

GEOS F262--Rocks and Minerals--3 credits

### **Geospatial Sciences**

GEOS F222--Fundamentals of Geospatial Sciences--3 credits

GEOS F225--Field and Computer Methods in Geology (2)

and GEOS F408--Photogeology (2)--4 credits

### **Weather and Climate**

ATM F101X--Weather and Climate of Alaska--4 credits

GEOG F307--Weather and Climate--3 credits

d. Complete a minimum of two courses from one of the following specialized areas:\*

### **Mitigation**

HSEM F412--Emergency Planning and Preparedness--3 credits

HSEM F423--Disaster Response Operations and Management--3 credits

HSEM F434--All Hazards Risk Analysis--3 credits

### **Communications**

COMM F335O--Organizational Communications--3 credits

COMM F353--Conflict, Mediation, and Communication--3 credits

COMM F441--Persuasion--3 credits

e. Complete any the requirements for a minor in geology, paleontology, geospatial sciences, geography, communications, journalism, sociology or other field related to communicating and mitigating natural hazards, as approved by the undergraduate advisor.

f. Minimum credits required--120 credits

### **Secondary Education**

a. Complete the following:\*

GEOG F101--Expedition Earth: Introduction to Geography--3 credits

GEOS F262--Rocks and Minerals--3 credits

GEOS F315W--Paleobiology and Paleontology--4 credits

GEOS F475--Presentation Techniques in the Geosciences--2 credits

MSL F111X--The Oceans--4 credits

PHYS F175X--Introduction to Astronomy--4 credits

PSY F101--Introduction to Psychology--3 credits

b. Complete one course from each of the following areas:\*

### **Landform Analysis**

GEOG F111X--Earth and Environment: Elements of Physical Geography--4 credits

GEOS F304--Geomorphology--3 credits

### **Geospatial Sciences**

GEOS F222--Fundamentals of Geospatial Sciences--3 credits

GEOS F225--Field and Computer Methods in Geology--2 credits  
 GEOS F338--Introduction to Geographic Information Systems--3 credits  
**Weather and Climate**  
 ATM F101X--Weather and Climate of Alaska--4 credits  
 GEOG F307--Weather and Climate--3 credits  
**Natural Resources**  
 GEOG F302--Geography of Alaska--3 credits  
 GEOG F402--Resources and Environment--3 credits  
**Evolutionary Processes**  
 GEOS F309--Tectonics--3 credits  
 GEOG F485--Mass Extinctions, Neocatastrophism, and the History of Life--3 credits  
 GEOS F486--Vertebrate Paleontology--3 credits  
 c. Complete the requirements for a minor in secondary education--16 credits  
 d. Complete the additional requirements of the secondary education licensure program\*\*--19 credits  
 e. Minimum credits required--130 credits

**C. PROPOSED REQUIREMENTS AS IT WILL APPEAR IN THE CATALOG WITH THESE CHANGES:**  
 (Underline new wording strike-through-old wording and use complete catalog format)

**Major -- B.A. Degree**

1. Complete the general university requirements, including 39 Upper Division credits. (As part of the general education requirements, complete: NRM F303X\*, CHEM F103X and CHEM F104X or CHEM F105X and CHEM F106X or PHYS F103X and PHYS F104X).
2. Complete the B.A. degree requirements. (Note that social science (s) courses are included in each of the concentrations. These courses may also be applied to the B.A. degree requirements).
3. Complete the following foundation courses:\*  
 GEOS F101X--The Dynamic Earth (4)  
     or GEOS F120X--Glaciers, Earthquakes and Volcanoes (4)--4 credits  
 GEOS F112X--The History of Earth and Life (4)  
     or GEOS F106X--Life in the Age of Dinosaurs(4)--4 credits
4. Complete one of the following concentrations:

**Earth Systems Science**

- a. Complete the following:\*  
 GEOS F304--Geomorphology--3 credits  
 GEOS F315W--Paleobiology and Paleontology--4 credits  
GEOG 483W Research Design, Writing and Presentation Methods 3 credits

- b. Complete one course from each of the following areas:\*

**Earth Systems**

GEOG F101--Expedition Earth: Introduction to Geography--3 credits  
 MSL F111X--The Oceans--4 credits  
 NRM F101--Natural Resource Conservation Policy--3 credits  
 PHYS F175X--Introduction to Astronomy--4 credits

**Earth Materials**

GEOS F213--Mineralogy--4 credits  
 GEOS F262--Rocks and Minerals--3 credits

**Geospatial Sciences**

GEOG F338--Introduction to Geographic Information Systems--3 credits  
~~GEOS F222--Fundamentals of Geospatial Sciences--3 credits~~  
 GEOS F225--Field and Computer Methods in Geology (2)  
     and GEOS F408--Photogeology (2)--4 credits

- c. Complete one course from any two of the following areas:\*

**Weather and Climate**

ATM F101X--Weather and Climate of Alaska--4 credits  
 GEOG F307--Weather and Climate--3 credits

**Natural Resources**

GEOG F302--Geography of Alaska--3 credits  
 GEOS F332--Ore Deposits and Structure  
~~GEOG F402--Resources and Environment--3 credits~~

### Geoscience

GEOS F309--Tectonics--3 credits

GEOS F322--Stratigraphy and Sedimentation--4 credits

### Geobiology

GEOS F485--Mass Extinctions, Neocatastrophism, and the History of Life--3 credits

GEOS F486--Vertebrate Paleontology--3 credits

d. Complete 9 additional credits at the F300 level or above with an emphasis in geology, geography, biology, natural resources management or other earth science-related field as approved by the undergraduate advisor, including one W (writing-intensive) course and one O (oral-intensive) course.--9 credits

e. Complete any UAF minor. Courses used to satisfy the upper-division emphasis may also be applied towards the requirements for a minor.

f. Minimum credits required--120 credits

### Geological Hazards and Mitigation

a. As part of the ~~core curriculum~~ General Education requirements, complete SOC F100X and COMM F300X. As part of the B.A. requirements, complete STAT 200X.

b. Complete the following:\*

ED F486W,O--Media Literacy--3 credits

ENGL F314W,O/2--Technical Writing--3 credits

GEOS F304--Geomorphology--3 credits

GEOS F380--Geological Hazards--3 credits

GEOS F406--Volcanology--3 credits

HSEM F301--Principles of Emergency Management and Homeland Security--3 credits

PHYS F175X--Introduction to Astronomy--4 credits

~~STAT F200X--Elementary Probability and Statistics--3 credits~~

GEOG 483W Research Design, Writing and Presentation Methods 3 credits

c. Complete one course from each of the following areas:\*

#### Earth Materials

GEOS F213--Mineralogy--4 credits

GEOS F262--Rocks and Minerals--3 credits

#### Geospatial Sciences

~~GEOS F222--Fundamentals of Geospatial Sciences--3 credits~~

GEOG F338--Introduction to Geographic Information Systems--3 credits

GEOS F225--Field and Computer Methods in Geology (2)

and GEOS F408--Photogeology (2)--4 credits

#### Weather and Climate

ATM F101X--Weather and Climate of Alaska--4 credits

GEOG F307--Weather and Climate--3 credits

d. Complete a minimum of two courses from one of the following specialized areas:\*

#### Mitigation

HSEM F412--Emergency Planning and Preparedness--3 credits

HSEM F423--Disaster Response Operations and Management--3 credits

HSEM F434--All Hazards Risk Analysis--3 credits

#### Communications

COMM F335O--Organizational Communications--3 credits

COMM F353--Conflict, Mediation, and Communication--3 credits

COMM F441--Persuasion--3 credits

e. Complete any the requirements for a minor in geology, paleontology, geospatial sciences, geography, communications, journalism, sociology or other field related to communicating and mitigating natural hazards, as approved by the undergraduate advisor.

f. Minimum credits required--120 credits

## Secondary Education

As part of the General Education Requirements, complete PSY F101 (3) and GEOG F101 (3)

a. Complete the following:\*

~~GEOG F101--Expedition Earth: Introduction to Geography--3 credits~~  
~~GEOS F262--Rocks and Minerals--3 credits~~  
~~GEOS F315W--Paleobiology and Paleontology--4 credits~~  
~~GEOS F475--Presentation Techniques in the Geosciences--2 credits~~  
~~GEOS F487--Individual Study / Mentored Teaching Internship--2-4 credits~~  
~~MSL F111X--The Oceans--4 credits~~  
~~PHYS F175X--Introduction to Astronomy--4 credits~~  
~~PSY F101--Introduction to Psychology--3 credits~~

b. Complete one course from each of the following areas:\*

### Landform Analysis

~~GEOG F111X--Earth and Environment: Elements of Physical Geography--4 credits~~  
~~GEOS F304--Geomorphology--3 credits~~

### Geospatial Sciences

~~GEOS F222--Fundamentals of Geospatial Sciences--3 credits~~  
~~GEOS F225--Field and Computer Methods in Geology--2 credits~~  
~~GEOS F338--Introduction to Geographic Information Systems--3 credits~~

### Weather and Climate

~~ATM F101X--Weather and Climate of Alaska--4 credits~~  
~~GEOG F307--Weather and Climate--3 credits~~

### Natural Resources

~~GEOG F302--Geography of Alaska--3 credits~~  
~~GEOS F332--Ore Deposits and Structure...3 credits~~  
~~GEOG F402--Resources and Environment--3 credits~~

### Evolutionary Processes

~~GEOS F309--Tectonics--3 credits~~  
~~GEOG F485--Mass Extinctions, Neocatastrophism, and the History of Life--3 credits~~  
~~GEOS F486--Vertebrate Paleontology--3 credits~~

c. Complete the requirements for a [minor in secondary education](#)--16 credits

d..Complete the additional requirements of the [secondary education licensure program](#)\*\*--19 credits

e. Minimum credits required--130 credits

## D. ESTIMATED IMPACT

*WHAT IMPACT, IF ANY, WILL THIS HAVE ON BUDGET, FACILITIES/SPACE, FACULTY, ETC.*

**Minimal impact is expected as all courses are already taught.**

## E. IMPACTS ON PROGRAMS/DEPTS:

*What programs/departments will be affected by this proposed action?  
Include information on the Programs/Departments contacted (e.g., email, memo)*

None outside of Geosciences

## F. IF MAJOR CHANGE - ASSESSMENT OF THE PROGRAM:

*Description of the student learning outcomes assessment process.)*

**We've used the teaching internship for the education option and the geography capstone seminar for the others and need to make it official. Performance of students in the Secondary Education internship will be assessed by a mentor teacher at a rural school in consultation with UAF faculty members Fowell and/or Kaden. Performance of students on written and oral assignments in the geography seminar will be the focus of program assessment. Student performance in these courses will be embedded in our SLOA reports.**

### **JUSTIFICATION FOR ACTION REQUESTED**

The purpose of the department and campus-wide curriculum committees is to scrutinize program/degree change applications to make sure that the quality of UAF education is not lowered as a result of the proposed change. Please address this in your response. This section needs to be self-explanatory. If you drop a course, is it because the material is covered elsewhere? Use as much space as needed to fully justify the proposed change and explain what has been done to ensure that the quality of the program is not compromised as a result.

**Geos 222 and GEOG 402 are no longer offered; we have removed them and replaced them with other suitable courses. We also added a note RE 39 UD credits (some of the options do not specifically include 39 UD). Finally, in order to meet the 120 or 130 credit caps, despite requiring 2-3 additional credits, we have moved some required courses into the General Education or BA requirements.**

**Having official capstone courses is a vital need that we're addressing. For students in the Secondary Education major, a 1-2 week, 2-4 credit, mentored teaching internship in a rural Alaskan school will allow students to practice skills under the direction of a mentor teacher. At the same time, these students will bring hands-on Earth Science exercises to secondary students who do not have a dedicated Earth Science teacher. The internship will be set up as an individual study with Drs. Fowell (Geosciences) and/or Kaden (Education) so that it can be tailored to the location and duration of the experience. Kaden and Fowell will schedule the internships with mentor teachers, visit classrooms, and work with students prior to starting the internship to create and deliver place-based Earth Science instruction.**

**APPROVALS: SIGNATURES MUST BE OBTAINED PRIOR TO SUBMISSION TO THE GOVERNANCE OFFICE**

|   |             |         |
|---|-------------|---------|
|  | Date        | 2/12/16 |
| Signature, Chair, Program/Department of:  | GEOSCIENCES |         |

|  |      |         |
|--|------|---------|
| J. Larsen  | Date | 2/20/16 |
| Signature, Chair, College/School Curriculum Council for: | CNSM |         |

|   |      |         |
|---|------|---------|
|  | Date | 2/24/16 |
| Signature, Dean, College/School of:   | CNSM |         |

**CHAIR SIGNATURE OBTAINED FOLLOWING APPROVAL BY FACULTY SENATE COMMITTEE**

|   |      |  |
|---|------|--|
|   | Date |  |
| Signature, Chair, UAF Faculty Senate<br>___ Curriculum Review Committee |      |  |