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**PROGRAM/DEGREE REQUIREMENT CHANGE (MAJOR)**

**SUBMITTED BY:**

Department	<b>Geosciences</b>	College/School	<b>CNSM</b>
Prepared by	<b>Cary de Wit</b>	Phone	<b>474-7141</b>
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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	<b>Geography</b>
Degree Level: (i.e., Certificate, A.A., A.A.S., B.A., B.S., M.A., M.S., Ph.D.)	<b>B.A. and B.S.</b>

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

- Minor changes to the Geography program description.
- Changes to BA and BS degrees to incorporate new course offerings and of new faculty expertise.
- Substantial changes to Geography BS Landscape Analysis and Climate Change Studies concentration to increase the flexibility and range of courses so that students can get all their required courses in a timely manner, and to better reflect actual course availability.
- Substantial changes to Geography BS Geospatial Sciences concentration to incorporate more of the geospatial courses offered by the Geoscience program.
- Addition of electives to the GIS Minor to add flexibility and take advantage of new course offerings.

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

**GEOGRAPHY**

College of Natural Science and Mathematics  
 Department of Geosciences  
 907-474-7565  
[www.uaf.edu/cnsm/](http://www.uaf.edu/cnsm/)

**B.A., B.S. Degrees**

Minimum Requirements for Degrees: 120 credits

Geography is a broad, holistic study of the interactions among various natural/environmental, political, cultural and economic systems, and how those interactions create the world we see today at both local and global scales. Geography takes a synthesizing and inherently interdisciplinary approach to develop an integrated understanding of climate change, resource development, energy use and conservation, geopolitics, sustainable development, assessment of natural and human-caused environmental hazards, land-use change, regional conflicts, and economic and political developments all over the world. Geography also provides the framework for the integration of existing and emerging technologies such as GIS, remote sensing and geo-visualization into a broad range of academic and professional fields.

The geography B.A. and B.S. degrees are built upon a group of required courses that gives students a firm grounding in the fundamental components of the discipline, including global geographic perspectives, geography of the earth’s natural systems, geography of human systems, geospatial sciences (GIS, remote sensing, geo-visualization), and the synthesis of these core perspectives through an integrating capstone experience.

Our students find work in such fields as mapping technology (GIS/ cartography), regional planning, international relations, state and federal resource management, transportation planning, environmental impact assessment, tourism, and teaching. Many of our students go on to graduate study in geography, natural resources, environmental science or planning. The geography B.A. degree gives students a broad understanding of the interactions among the physical environments, economics, political events, and cultures of various

regions of the world, and equips students with the ability to interpret contemporary geopolitical and environmental issues. The B.A. prepares students for careers in management, policy, teaching, field-based research, regional planning, and a variety of private sector careers. The B.A. also provides an excellent foundation for graduate studies in a wide range of academic disciplines.

B.A. students are encouraged to coordinate minors, electives and internships to develop further expertise within a chosen region or topic, to take advantage of the considerable topical and regional expertise found throughout the UAF community, and also to underscore the important role other disciplines play within the field of geography.

Three specialized concentrations are available to students pursuing the B.S. degree: environmental studies; landscape analysis and climate change studies; and geospatial sciences.

The environmental studies concentration provides the foundation for understanding interactions between natural and human systems, analysis of environmental issues from an interdisciplinary geographic perspective, a diverse technical and scientific approach to environmental issues, and the ability to design balanced solutions to environmental problems.

The landscape analysis and climate change studies concentration integrates and synthesizes courses in geography, climate, geologic and biological sciences, as well as geospatial sciences. Students gain a sound and interdisciplinary understanding of how environmental change influences landscape patterns and human activity and welfare on both spatial and temporal scales. Senior capstone and internship courses offer integrating capstone experiences, enabling students to apply what they have learned in real-world settings.

The geospatial sciences concentration emphasizes skills and practices in geographic information systems, remote sensing, geovisualization and analysis of spatial patterns. Courses in GIS, remote sensing, GPS, map design, spatial statistics and computer programming are integrated with the geography foundation curriculum and courses in the natural sciences.

## Major — B.A. Degree

1. Complete the general university requirements (page 127).
2. Complete the BA degree requirements (page 132).
3. As part of the baccalaureate core requirements, complete NRM F303X.\*
4. Complete the following:\*
  - GEOG F101—Expedition Earth: Introduction to Geography.....3
  - GEOG F111X—Earth and Environment: Elements of Physical Geography.....4
  - GEOG F312—People, Places, and Environment: Principles of Human Geography.....3
  - GEOG F490W,O—Geography Seminar.....3
  - NRM F338—Introduction to Geographic Information Systems.....3
5. Complete the following program (major) requirements. Students will tailor their program through course selection from the categories below in consultation with their advisor to focus on a subspecialty in the circumpolar North and/or the Pacific Rim.\*
  - a. Regional geography: Complete two of the following:
    - GEOG F302—Geography of Alaska.....3
    - GEOG F303—Geography of United States and Canada.....3
    - GEOG F305W—Geography of Europe.....3
    - GEOG F306—Geography of Russia.....3
    - GEOG F311W—Geography of Asia.....3
    - GEOG F410—Geography of the Pacific Rim.....3
    - GEOG F427—Polar Geography.....3
  - b. Physical geography: Complete one of the following:
    - GEOG F307—Weather and Climate.....3
    - GEOG F339—Maps and Landscape Analysis.....4
    - GEOG F412—Geography of Climate and Environmental Change.....3
    - GEOG F418—Biogeography.....3
  - c. Human geography: Complete one of the following:
    - GEOG F405—Political Geography.....3
    - GEOG F420—Geopolitics of Energy.....3
    - NRM F403W/O—Environmental Decision Making.....3
  - d. Techniques: Complete one of the following:
    - GEOG F309—Digital Cartography and Geo-Visualization.....4

GEOG F430—Google Earth and Neogeography.....	3
GEOG F483W—Research Design, Writing, and Presentation Methods.....	3
GEOS F422—Geoscience Applications of Remote Sensing.....	3
GEOS F458—Geoscience Applications of GPS and GIS.....	3
NRM F366—Survey Research in Natural Resource Management....	3
NRM F435—GIS Analysis.....	4

e. Geography electives: Complete two courses from any of the above categories, or other courses appropriate to the student’s chosen program of study. Both courses must be at F300 level or higher and approved by the student’s advisor.

6. Minimum credits required.....120

\* Students must earn a C grade or better in each course.

*Note: Geography majors are encouraged to reinforce their program focus with a minor in one of the following areas: Alaska Native Studies, Anthropology, Asian Studies, Economics, Environmental Politics, Foreign Languages, Geology, Geophysics, Global Studies, History, Journalism, Natural Resource Management, Northern Studies, Political Science, Rural Development, Russian Studies.*

*Note: Students and faculty advisors should carefully review prerequisites for courses outlined in each required and/or optional area. In some instances courses, either in geography or other fields, require successful completion of 1–3 prerequisite courses. Therefore, students and faculty should note minimum degree credit hours are 120, but the actual number of required course credits may exceed that number.*

## Major — B.S. Degree

- Complete the general university requirements (page 127).
- Complete the B.S. degree requirements (page 132). See individual BS concentrations for specific course requirements. As part of the BS degree requirements, complete MATH F232X or MATH F251X.\*
- As part of the baccalaureate core requirements, complete NRM F303X; STAT F200X.\*
- Complete the following:
  - GEOG F101—Expedition Earth: Introduction to Geography.....3
  - GEOG F111X—Earth and Environment: Elements of Physical Geography.....4
  - GEOG F312—People, Places and Environment: Principles of Human Geography.....3
  - GEOG F490W,O—Geography Seminar.....3
  - NRM F338—Introduction to Geographic Information Systems.....3
- Complete one of the following concentrations:\*

### Environmental Studies

- As part of the baccalaureate core requirements, complete CHEM F105X.\*
- As part of the BS degree requirements, complete BIOL F115X; BIOL F116X;
- Complete the following:
  - GEOG F207—Research Methods and Statistics in Geography.....3
  - GEOG F307—Weather and Climate.....3
  - GEOG F339—Maps and Landscape Analysis.....4
  - GEOG F483W—Research Design, Writing, and Presentation Methods.....3
- Complete two courses from the following environmental studies electives:
  - GEOG F412—Geography of Climate and Environmental Change...3
  - GEOG F488—Geographic Assessment and Prediction of Natural Hazards.....3
  - NRM F403W/O—Environmental Decision Making.....3
  - NRM F407—Environmental Law.....3
- Complete three courses from the following environmental system electives:
  - ANTH F428—Ecological Anthropology and Regional Sustainability.....3
  - BIOL F371—Principles of Ecology.....4
  - BIOL/NRM F277—Introduction to Conservation Biology.....3
  - GEOG F418—Biogeography.....3
  - GEOS F304—Geomorphology.....3
  - NRM F375—Natural Resource Ecology.....3
  - NRM F380W—Soils and the Environment.....3
- Complete one of the following environmental management electives:
  - NRM F365—Principles of Outdoor Recreation Management.....3

NRM F370—Introduction to Watershed Management.....	3
NRM F430—Resource Management Planning.....	3
NRM F464—Wilderness Management.....	3
NRM F480—Soil Management for Quality and Conservation.....	3

g. Complete one of the following techniques electives:

GEOG F309—Digital Cartography and Geo-Visualization.....	4
GEOS F422—Geoscience Applications of Remote Sensing.....	3
GEOS F458—Geoscience Applications of GPS and GIS.....	3
NRM F366—Survey Research in Natural Resource Management.....	3
NRM F435—GIS Analysis.....	4

### **Landscape Analysis and Climate Change Studies**

a. As part of the baccalaureate core requirements, complete CHEM F105X\*.

b. As part of the B.S. degree requirements, complete BIOL F115X; BIOL F116X.

c. Complete the following processes requirements (geomorphology, climate, ecology, systems):

BIOL F371—Principles of Ecology.....	4
GEOG F307—Weather and Climate .....	3
GEOG F412—Geography of Climate and Environmental Change.....	3
GEOG F418—Biogeography.....	3
GEOS F304—Geomorphology.....	3

d. Complete one of the following processes electives:

NRM F370—Watershed Management.....	3
NRM F380W—Soils and the Environment.....	3 or a processes-oriented content course approved by a geography faculty advisor.

e. Complete the following patterns requirements (field methods, GIS/ remote sensing tools):

GEOG F309—Digital Cartography and Geo-Visualization.....	4
GEOG F339—Maps and Landscape Analysis.....	4
NRM F435—GIS Analysis (4) or GEOS F458—Geoscience Applications GPS and GIS (3).....	3-4

f. Complete at least one of the following patterns electives:

GE F471—Remote Sensing for Engineering.....	3
GEOS F422—Geoscience Applications of Remote Sensing.....	3
NRM F641—Remote Sensing Applications in Natural Resources.....	4

g. Complete the following capstone requirement (program synthesis):

GEOG F483W—Research Design, Writing, and Presentation Methods.....	3
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### **Geospatial Sciences**

a. Complete the following: CS F103—Introduction to Computer Programming.....

GEOG F300—Internship in Geography (in GIS).....	3
GEOG F339—Maps and Landscape Analysis.....	3-4
NRM F435—GIS Analysis.....	4

b. Complete at least two remote sensing electives:

GE F471—Remote Sensing for Engineering.....	3
GEOS F422—Geoscience Applications of Remote Sensing.....	3
NRM F641—Remote Sensing Applications in Natural Resources.....	4

c. Complete at least two GIS electives:

GE F376—GIS in Geological and Environmental Engineering.....	3
GEOG F309—Digital Cartography and Geo-Visualization.....	4
GEOS F458—Geoscience Applications of GPS and GIS.....	3
NRM F638—GIS Programming**.....	3

d. Complete at least two landscape electives:

BIOL F4690—Landscape Ecology and Wildlife Habitat.....	3
GEOS F304—Geomorphology.....	3
GEOS F408—Photogeology.....	2

GEOS F430— Statistics and Data Analysis in Geology.....3

6. Minimum credits required.....120

\* Students must earn a C grade or better in each course.

\*\* Graduate level credit used to complete this undergraduate degree program may NOT be applied towards future graduate degree programs.

Note: Students and faculty advisors should carefully review prerequisites for courses outlined in each required and/or optional area. In some instances, courses, either in geography or other fields, require successful completion of from 1-3 prerequisite courses. Therefore, students and faculty should note minimum degree credit hours are 120, but the actual number of required course credits may exceed that number.

**Minor**

**Geography**

1. Complete the following:

GEOG F101—Expedition Earth: Introduction to Geography.....3

GEOG F111X—Earth and Environment: Elements of Physical  
Geography.....4

GEOG electives.....9

2. Minimum credits required.....16

\* Students must earn a C grade or better in each course.

**Geographic Information Systems**

1. Complete the following:\*

GEOG F111X—Earth and Environment: Elements of Physical  
Geography.....4

GEOG F309—Digital Cartography and Geo-Visualization.....4

GEOS F458—Geoscience Applications of GPS and GIS.....3

NRM F338—Introduction to Geographic Information Systems.....3

2. Complete one of the following:\*

GEOG F300—Internship in Geography (in GIS) (3)  
or any GIS-related course approved by advisor (3).....3

GEOG F430—Google Earth and Neogeography.....3

NRM F369—GIS and Remote Sensing for Natural Resources.....3

NRM F435—GIS Analysis.....4

3. Minimum credits required.....17

\* Students must earn a C grade or better in each course.

**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 )**

**GEOGRAPHY**

College of Natural Science and Mathematics  
Department of Geosciences  
907-474-7565  
www.uaf.edu/cnsm/

**B.A., B.S. Degrees**

Minimum Requirements for Degrees: 120 credits

Geography is a broad, holistic study of the interactions among various natural/environmental, political, cultural and economic systems, and how those interactions create the world we see today at both local and global scales. Geography takes a synthesizing and inherently interdisciplinary approach to develop an integrated understanding of climate change, resource development, energy use and conservation, geopolitics, sustainable development, assessment of natural and human-caused environmental hazards, land-use change, regional conflicts, and economic and political developments all over the world. Geography also provides the framework for the integration of existing and emerging technologies such as GIS, remote sensing and geo-visualization into a broad range of academic and professional fields.

The geography B.A. and B.S. degrees are built upon a group of required courses that gives students a firm

grounding in the fundamental components of the discipline, including global geographic perspectives, geography of the earth's natural systems, geography of human systems, geospatial sciences (GIS, remote sensing, geo-visualization), and the synthesis of these core perspectives through an integrating capstone experience.

Our students find work in such fields as ~~mapping technology (GIS/ cartography)~~ geospatial sciences (GIS/ Remote Sensing/ cartography), regional planning, international relations, state and federal resource management, transportation planning, environmental impact assessment, tourism, and teaching. Many of our students go on to graduate study in geography, natural resources, environmental science or planning. The geography B.A. degree gives students a broad understanding of the interactions among the physical environments, economics, political events, and cultures of various regions of the world, and equips students with the ability to interpret contemporary geopolitical and environmental issues. The B.A. prepares students for careers in management, policy, teaching, field-based research, regional planning, and a variety of private sector careers. The B.A. also provides an excellent foundation for graduate studies in a wide range of academic disciplines.

B.A. students are encouraged to coordinate minors, electives and internships to develop further expertise within a chosen region or topic, to take advantage of the considerable topical and regional expertise found throughout the UAF community, and also to underscore the important role other disciplines play within the field of geography.

Three specialized concentrations are available to students pursuing the B.S. degree: environmental studies; landscape analysis and climate change studies; and geospatial sciences.

The environmental studies concentration provides the foundation for understanding interactions between natural and human systems, analysis of environmental issues from an interdisciplinary geographic perspective, a diverse technical and scientific approach to environmental issues, and the ability to design balanced solutions to environmental problems.

The landscape analysis and climate change studies concentration integrates and synthesizes courses in geography, climate, geologic and biological sciences, as well as geospatial sciences. Students gain a sound and interdisciplinary understanding of how environmental change influences landscape patterns and human activity and welfare on both spatial and temporal scales. Senior capstone and internship courses offer integrating capstone experiences, enabling students to apply what they have learned in real-world settings.

The geospatial sciences concentration emphasizes skills and practices in geographic information systems, remote sensing, geovisualization and analysis of spatial patterns. Courses in GIS, remote sensing, GPS, ~~map~~ cartographic design, spatial statistics and computer programming are integrated with the geography foundation curriculum and courses in the natural sciences.

## Major — B.A. Degree

1. Complete the general university requirements (page 127).
2. Complete the BA degree requirements (page 132).
3. As part of the baccalaureate core requirements, complete NRM F303X.\*
4. Complete the following: \*
  - GEOG F101—Expedition Earth: Introduction to Geography.....3
  - GEOG F111X—Earth and Environment: Elements of Physical Geography.....4
  - GEOG F312—People, Places, and Environment: Principles of Human Geography.....3
  - GEOG F490W,O—Geography Seminar.....3
  - NRM F338—Introduction to Geographic Information Systems.....3
5. Complete the following program (major) requirements. Students will tailor their program through course selection from the categories below in consultation with their advisor to focus on a subspecialty, such as Alaska, the Circumpolar North, Europe, Asia, or other region or topic of the student's choice. ~~in the circumpolar North and/or the Pacific Rim.~~ \*
  - a. Regional geography: Complete two of the following:
    - GEOG F302—Geography of Alaska.....3
    - GEOG F303—Geography of United States and Canada.....3
    - GEOG F305W—Geography of Europe.....3
    - GEOG F306—Geography of Russia.....3
    - GEOG F311W—Geography of Asia.....3
    - GEOG F410—Geography of the Pacific Rim.....3
    - GEOG F427—Polar Geography.....3
  - b. Physical geography: Complete one of the following:

GEOG F307—Weather and Climate.....	3
GEOG F339—Maps and Landscape Analysis.....	4
GEOG F412—Geography of Climate and Environmental Change.....	3
GEOG F418—Biogeography.....	3
GEOG F460—The Dynamic Alaskan Coastline.....	3

c. Human geography: Complete one of the following:

GEOG F405—Political Geography.....	3
GEOG F420—Geopolitics of Energy.....	3
NRM F403W/O—Environmental Decision Making.....	3

d. Techniques: Complete one of the following:

GEOG F309—Digital Cartography and Geo-Visualization.....	4
GEOG F430—Google Earth and Neogeography.....	3
GEOG F483W—Research Design, Writing, and Presentation Methods.....	3
GEOS F422—Geoscience Applications of Remote Sensing.....	3
GEOS F458—Geoscience Applications of GPS and GIS.....	3
NRM F366—Survey Research in Natural Resource Management....	3
NRM F435—GIS Analysis.....	4

e. Geography electives: Complete two courses from any of the above categories, or other courses appropriate to the student’s chosen program of study. Both courses must be at F300 level or higher and approved by the student’s advisor.

6. Minimum credits required.....120

\* Students must earn a C grade or better in each course.

Note: Geography majors are encouraged to reinforce their program focus with a minor in one of the following areas: Alaska Native Studies, Anthropology, Asian Studies, Economics, Environmental Politics, Foreign Languages, Geology, Geophysics, Global Studies, History, Journalism, Natural Resource Management, Northern Studies, Political Science, Rural Development, Russian Studies.

Note: Students and faculty advisors should carefully review prerequisites for courses outlined in each required and/or optional area. In some instances courses, either in geography or other fields, require successful completion of 1–3 prerequisite courses. Therefore, students and faculty should note minimum degree credit hours are 120, but the actual number of required course credits may exceed that number.

## Major — B.S. Degree

1. Complete the general university requirements (page 127).
2. Complete the B.S. degree requirements (page 132). See individual BS concentrations for specific course requirements. ~~As part of the B.S. degree requirements, complete MATH F232X or MATH F251X.\*~~
3. ~~As part of the B.S. degree requirements, complete MATH F232X or MATH F251X.\*~~

~~4.~~ As part of the baccalaureate core requirements, complete NRM F303X; STAT F200X.\*

~~4.~~ 5. Complete the following geography foundation requirements.\*

GEOG F101—Expedition Earth: Introduction to Geography.....	3
GEOG F111X—Earth and Environment: Elements of Physical Geography.....	4
GEOG F312—People, Places and Environment: Principles of Human Geography.....	3
GEOG F490W,O—Geography Seminar.....	3
NRM F338—Introduction to Geographic Information Systems.....	3

~~6.~~ 6. Complete the following capstone requirements (program synthesis):

GEOG F483W/O—Research Design, Writing, and Presentation Methods.....	3
<u>GEOS F488—Undergraduate Research.....</u>	<u>3</u>
<u>or GEOG F300—Internship in Geography.....</u>	<u>3</u>

~~5.~~ 7. Complete one of the following concentrations.\*

### Environmental Studies

- a. As part of the baccalaureate core requirements, complete CHEM F105X.\*
- b. As part of the BS degree requirements, complete BIOL F115X; BIOL F116X;
- c. Complete the following:
 

GEOG F207—Research Methods and Statistics in Geography.....	3
GEOG F307—Weather and Climate.....	3
GEOG F339—Maps and Landscape Analysis.....	4

- GEOG F483W—Research Design, Writing, and Presentation Methods.....3
- d. Complete two ~~courses from~~ of the following environmental studies electives:
- GEOG F412—Geography of Climate and Environmental Change...3
- GEOG F488—Geographic Assessment and Prediction of Natural Hazards.....3
- NRM F403W/O—Environmental Decision Making.....3
- NRM F407—Environmental Law.....3
- e. Complete three ~~courses from~~ of the following environmental system electives:
- ANTH F428—Ecological Anthropology and Regional Sustainability.....3
- BIOL F371—Principles of Ecology.....4
- BIOL/NRM F277—Introduction to Conservation Biology.....3
- GEOG F418—Biogeography.....3
- GEOG F460—The Dynamic Alaskan Coastline.....3
- GEOS F304—Geomorphology.....3
- ~~NRM F375—Natural Resource Ecology.....3~~
- NRM F380W—Soils and the Environment.....3
- f. Complete one of the following environmental management electives:
- NRM F365—Principles of Outdoor Recreation Management.....3
- NRM F370—Introduction to Watershed Management.....3
- NRM F430—Resource Management Planning.....3
- NRM F464—Wilderness Management.....3
- NRM F480—Soil Management for Quality and Conservation.....3
- g. Complete one of the following techniques electives:
- GEOG F309—Digital Cartography and Geo-Visualization.....4
- GEOS F422—Geoscience Applications of Remote Sensing.....3
- GEOS F458—Geoscience Applications of GPS and GIS.....3
- NRM F366—Survey Research in Natural Resource Management.....3
- NRM F435—GIS Analysis.....4

### **Landscape Analysis and Climate Change Studies**

- a. As part of the baccalaureate core requirements, complete ~~CHEM F105X\*~~ [ATM F101X and PHYS 103X\\*](#).
- b. As part of the B.S. degree requirements, complete ~~BIOL F115X; BIOL F116X.~~
- e. ~~b.~~ Complete the following required courses; ~~processes requirements (geomorphology, climate, ecology, systems):~~
- BIOL F371—Principles of Ecology.....4
- GEOG F307—Weather and Climate.....3
- GEOG F412—Geography of Climate and Environmental Change  
or ATM F456—Climate and Climate Change.....3
- GEOG F418—Biogeography.....3
- GEOS F304—Geomorphology.....3
- d. Complete one of the following processes electives:
- NRM F370—Watershed Management.....3
- NRM F380W—Soils and the Environment.....3 ~~or a processes oriented content course approved by a geography faculty advisor.~~
- c. Complete at least three of the following landscape process electives:
- GEOG F339—Maps and Landscape Analysis.....4
- GEOG F418—Biogeography.....3
- GEOG F460—The Dynamic Alaskan Coastline.....3
- GEOG F427—Polar Geography.....3
- d. Complete at least two of the following climate change electives:
- GEOG F307—Weather and Climate.....3
- GEOG F302—Geography of Alaska.....3
- GEOS F4770—Ice in the Climate System.....3
- GEOG F478—Ice Age Alaska.....3
- e. Complete the following patterns requirements (field methods, GIS/ remote sensing tools):
- GEOG F309—Digital Cartography and Geo-Visualization.....4



GEOG F339— Maps and Landscape Analysis.....	4
NRM F435— GIS Analysis (4)	
— or GEOS F458— Geoscience Applications GPS and GIS (3).....	3-4
f. Complete at least one of the following patterns electives:	
GE F471— Remote Sensing for Engineering.....	3
GEOS F422— Geoscience Applications of Remote Sensing.....	3
NRM F641— Remote Sensing Applications in Natural Resources.....	4
e. Complete at least <b>two of the following methods and applications</b> electives:	
<a href="#">GEOG F207— Research Methods and Statistics in Geography.....</a>	<a href="#">3</a>
<a href="#">GEOG F309— Digital Cartography and Geo-Visualization.....</a>	<a href="#">4</a>
<a href="#">GEOS F422— Geoscience Applications of Remote Sensing.....</a>	<a href="#">3</a>
<a href="#">GEOS F458— Geoscience Applications GPS and GIS .....</a>	<a href="#">3</a>
<a href="#">NRM F435— GIS Analysis.....</a>	<a href="#">4</a>
g. Complete the following capstone requirement (program synthesis):	
GEOG F483W— Research Design, Writing, and Presentation Methods.....	3

### Geospatial Sciences

a. Complete <b>at least four of</b> the following:	
CS F103— Introduction to Computer Programming.....	3
GEOG F300— Internship in Geography (in GIS).....	3
<a href="#">GEOG F207— Research Methods and Statistics in Geography.....</a>	<a href="#">3</a>
GEOG F339— Maps and Landscape Analysis.....	3-4
NRM F435— GIS Analysis.....	4
<a href="#">GEOS F422— Geoscience Applications of Remote Sensing.....</a>	<a href="#">3</a>
b. Complete at least <del>two</del> <b>at least three of the following GIS and</b> remote sensing electives:	
GE F376— GIS Applications in Geological and Environmental Engineering.....	3
GE F471— Remote Sensing for Engineering.....	3
GEOG F309— Digital Cartography and Geo-Visualization.....	4
GEOS F422— Geoscience Applications of Remote Sensing.....	3
<a href="#">GEOS F436— Beyond the Mouse: Computer Programming.....</a>	<a href="#">3</a>
<a href="#">GEOS F458— Geoscience Applications of GPS and GIS.....</a>	<a href="#">3</a>
<a href="#">NRM F369— GIS and Remote Sensing for Natural Resources.....</a>	<a href="#">3</a>
<a href="#">NRM F638— GIS Programming**.....</a>	<a href="#">3</a>
NRM F641— Remote Sensing Applications in Natural Resources.....	4
e. Complete at least two GIS electives:	
GE F376— GIS in Geological and Environmental Engineering.....	3
GEOG F309— Digital Cartography and Geo-Visualization.....	4
GEOS F458— Geoscience Applications of GPS and GIS.....	3
<a href="#">NRM F638— GIS Programming**.....</a>	<a href="#">3</a>
d. c. Complete at least two landscape electives:	
BIOL F469O— Landscape Ecology and Wildlife Habitat.....	3
<a href="#">GEOG F427— Polar Geography.....</a>	<a href="#">3</a>
<a href="#">GEOG F460— The Dynamic Alaskan Coastline.....</a>	<a href="#">3</a>
<a href="#">GEOG F478— Ice Age Alaska .....</a>	<a href="#">3</a>
GEOS F304— Geomorphology.....	3
GEOS F408— Photogeology.....	2
GEOS F430— Statistics and Data Analysis in Geology.....	3
<b>6. 8.</b> Minimum credits required.....	120

\* Students must earn a C grade or better in each course.

\*\* Graduate level credit used to complete this undergraduate degree program may NOT be applied towards future graduate degree programs.

Note: Students and faculty advisors should carefully review prerequisites for courses outlined in each required and/or optional area. In some instances, courses, either in geography or other fields, require successful completion of from 1-3 prerequisite courses. Therefore, students and faculty should note minimum degree credit hours are 120, but the actual number of required course credits may exceed that number.

## Minor

### Geography

1. Complete the following:  
GEOG F101—Expedition Earth: Introduction to Geography.....3  
GEOG F111X—Earth and Environment: Elements of Physical  
Geography.....4  
GEOG electives.....9

2. Minimum credits required.....16

\* Students must earn a C grade or better in each course.

### Geographic Information Systems

1. Complete at least four of the following: \*  
GEOG F111X—Earth and Environment: Elements of Physical  
Geography.....4  
GEOG F309—Digital Cartography and Geo-Visualization.....4  
[GEOG F339—Maps and Landscape Analysis.....4](#)  
[GEOG F460—The Dynamic Alaskan Coastline.....3](#)  
[GEOS F422—Geoscience Applications of Remote Sensing.....3](#)  
GEOS F458—Geoscience Applications of GPS and GIS.....3  
NRM F338—Introduction to Geographic Information Systems.....3
2. Complete one of the following: \*  
GEOG F300—Internship in Geography (in GIS) (3)  
—or any GIS related course approved by advisor (3).....3  
GEOG F300—Internship in Geography (in GIS) .....3  
[GEOS F488—Undergraduate Research.....3](#)  
GEOG F430—Google Earth and Neogeography.....3  
NRM F369—GIS and Remote Sensing for Natural Resources.....3  
NRM F435—GIS Analysis.....4
3. Minimum credits required.....17 15

\* Students must earn a C grade or better in each course.

#### D. ESTIMATED IMPACT

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

**No significant impact. Will use existing faculty, space, and curriculum resources.**

#### 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)

**These changes will have no known impact on other programs.**

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

Description of the student learning outcomes assessment process.)

**Geography SLOA consists of assembling a concise portfolio of student work and evaluations of that work. Written work and records of oral presentations are systematically collected from specific required courses as each geography major progresses through his/her program. Each student's early work from introductory courses is compared to work produced in senior capstone courses, and a faculty committee produces an evaluation of improvement in writing, presentation, and critical thinking skills for each student. These evaluations are then compiled in aggregate form to give a general representation of measurable improvement in these skills for a given cohort of graduating students. These aggregate measures will be compared from year to year to assess whether the entire degree program is producing an increase, decrease, or steady state in student learning over time.**

**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.

**These changes are being made to adjust to changes in program priorities, faculty availability, and new faculty expertise within the Geography Program. The changes also take advantage of course and faculty resources that are more available to the Geography Program now that it has joined CNSM and merged into the Department of Geosciences. In particular, changes to the Landscape Analysis and Climate Change (LACC) and Geospatial Sciences (GESP) concentrations of the Geography B.S. have dropped some NRM courses and added some Physics, Atmospheric Science, and Geoscience courses.**

**BIOL 371 was dropped from the LACC concentration because the chain of prerequisites leading up to it was causing delayed graduation for many of our students. BIOL 115X and 116X have been dropped from the LACC concentration since they were essentially included to prepare students for BIOL 371.**

**BIOL 469 has been dropped from the GESP concentration for the same reason; there is a 2-3 year chain of prerequisites leading up to that course, and the GESP students were simply not taking that path.**

**GEOG/GEOS 460 (upgraded from GEOS 330) The Dynamic Alaskan Coastline, is a welcome addition to all of the Geography degree options. The original instructor of this course left UAF a few years ago, so it has been languishing. The new geography hire, Chris Maio, specializes in coastal geomorphology, and he is enthusiastic about revising the course and incorporating it into the Geography and Geoscience programs, as both an undergraduate and graduate course.**

**GEOG/GEOS 487 Ice Age Alaska is another course recently developed by Geography faculty member Dan Mann. This is another course that takes advantage of the particular expertise of our faculty, and also makes a contribution to the undergraduate and graduate Geoscience programs, as well as supporting UAF's Arctic/Alaska teaching mission.**

**Many of the changes to the LACC and GESP concentrations are simply a rearrangement of the same courses into more coherent and consolidated categories, but with more elective options to allow students more flexibility. Around half of Geography majors have transferred from another institution or switched from a different major, and the existing, less flexible, degree requirements (combined with infrequent or inconsistent offerings) have created obstacles to timely graduation for many of these students. Our closer relationship with CNSM programs has helped us find several appropriate and high-quality courses that serve to broaden our students' options.**

SEE ATTACHED SIGNATURES

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

	Date	
Signature, Chair, Program/Department of: _____		
	Date	
Signature, Chair, College/School Curriculum Council for: _____		
	Date	
Signature, Dean, College/School of: _____		

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

	Date	
Signature, Chair, UAF Faculty Senate ___Curriculum Review Committee ___Graduate Academic and Advisory Committee		

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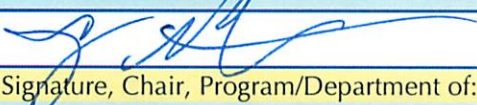

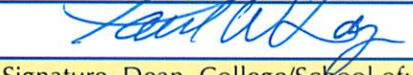
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**APPROVALS: SIGNATURES MUST BE OBTAINED PRIOR TO SUBMISSION TO THE GOVERNANCE OFFICE**

	Date	9-30-2015
Signature, Chair, Program/Department of:	Geography	
	Date	10-16-15
Signature, Chair, College/School Curriculum Council for:	CNSM	
	Date	10/18/15
Signature, Dean, College/School of:	CNSM	

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

  	Date	  
Signature, Chair, UAF Faculty Senate ___Curriculum Review Committee  ___Graduate Academic and Advisory Committee		