

FORMAT 5

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PROGRAM/DEGREE REQUIREMENT CHANGE (MAJOR/MINOR)

SUBMITTED BY:

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

PROGRAM IDENTIFICATION:

DEGREE PROGRAM	Geography
Degree Level: (i.e., Certificate, A.A., A.A.S., B.A., B.S., M.A., M.S., Ph.D.)	B.S.

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

We are adding a concentration in “Environmental Decision Making” to the Geography BS degree, and are making a few changes to our existing GIS&T concentration (changing the name, adding a course). Other minor editorial changes are intended to improve catalog listing.

The Environmental Decision Making concentration emphasizes quantitative methods, critical thinking, and the interdisciplinary nature of environmental decisions.

We are proposing minor changes to our existing concentration in GIS&T, changing the name of the concentration to *Geospatial Sciences* and integrating a new course GEOS/GEOS 222 Fundamentals of Geospatial Sciences. This is part of a collaborative effort with the Department of Geology and Geophysics to better align the geospatial course offerings on campus, and to mutually strengthen both programs.

B. CURRENT REQUIREMENTS AS IT APPEARS IN THE CATALOG:

Geography

School of Natural Resources and Agricultural Sciences
 UA Geography Program
 907-474-7494
www.uagp.uaf.edu

B.A., B.S. Degrees; Minor

Downloadable PDF

Minimum Requirements for Degrees: 120 credits

Geography provides a holistic view of the earth, its distinct and varied regions, as well as the types of and interaction between human activities and the physical world. Geography is the two-way bridge between the physical and social sciences as it explores the interrelationships between the earth's physical and biological systems and how these environmental systems provide a natural resource base for human societies. Geography also provides the framework

for the integration of new and emerging technologies such as GIS and remote sensing with studies in a broad range of academic disciplines.

Geographers are interested in patterns and processes of physical and social change, including climate change, geographic information science and technologies, human settlement patterns, natural resources distribution and management, environmental studies, and in the inherent "sense of place" among peoples throughout the world. Geographic methodologies include observation, measurement, description and analysis of places including likenesses, differences, interdependence and importance.

The geography B.A. degree provides broad cultural training and background in the liberal arts with an emphasis on the circumpolar North and Pacific Rim. The B.A. also provides a geographic perspective based on these regions and prepares students for careers in management, policy, teaching, field-based research, regional planning and private sector careers. The B.A. also provides an excellent foundation for advanced studies in a wide range of academic disciplines.

Three emphasis options are available to students pursuing the B.S. degree: environmental studies, landscape analysis and climate change studies, and geographic information science and technology.

Environmental studies provides the foundation necessary for understanding the natural and social environment, analysis of environmental issues from an interdisciplinary geographic perspective, a diverse technical and scientific approach to environmental issues, and the ability to find balanced solutions to environmental problems.

Landscape analysis and climate change studies integrate and synthesize courses in geography, climate change, physical and biological sciences, and geographic information sciences and technology. Students will gain a sound and interdisciplinary understanding of how environmental change influences landscape patterns and humans on both spatial (e.g. latitude, altitude) and temporal (e.g. past, future) scales. Senior practicum courses serve as integrating "capstone experiences" enabling students to apply what they have learned in real-world settings.

Geographic information science and technology emphasizes skills and practices in geographic information science, systems, technology and analytical aspects of geography. Courses in statistics, computer programming, GIS, GPS and remote sensing are integrated with the geography core curriculum and courses in natural sciences.

A minor in geography is also available.

Major -- B.S. Degree

1. Complete the general university requirements.
2. Complete the B.S. degree requirements.
3. Complete the following required foundation courses: *
 - GEOG F101--Expedition Earth: Introduction to Geography--3 credits
 - GEOG F111X--Earth and Environment: Elements of Physical Geography--4 credits
 - GEOG F312--People, Places, and Environment: Principles of Human Geography--3

credits

GEOG F338--An Introduction to GIS--3 credits

GEOG F490W,O--Geography Seminar--3 credits

4. Complete one of the following options:*

Geography Option I -- Environmental Studies

a. Complete the following:

GEOG F207--Research Methods and Statistics in Geography--3 credits

GEOG F307--Weather and Climate--3 credits

GEOG F339--Maps and Landscape Analysis--3 credits

GEOG F402--Resources and Environment--3 credits

b. Complete 6 credits from the following environmental studies electives:

GEOG F463--Wilderness Concepts--3 credits

NRM F303X--Environmental Ethics and Actions**--3 credits

NRM F407--Environmental Law--3 credits

c. Complete 9 credits from the following environmental system electives:

ANTH F428--Ecological Anthropology and Regional Sustainability***--3 credits

BIOL F271--Principles of Ecology***--4 credits

BIOL/NRM F277--Introduction to Conservation Biology***--3 credits

GEOS F304--Geomorphology--3 credits

NRM F375--Forest Ecology***--3 credits

NRM F380W--Soils and the Environment***--3 credits

d. Complete 3 credits from the following environmental management electives:

FISH F487W,O--Fisheries Management***--3 credits

NRM F365--Principles of Outdoor Recreation Management--3 credits

NRM F430--Resource Management Planning--3 credits

NRM/WLF F431--Wildlife Law and Policy***--3 credits

NRM F450--Forest Management***--3 credits

NRM F480--Soil Management for Quality and Conservation***--3 credits

e. Complete one of the following techniques courses:

GEOG F301--Geographic Field Studies--3 credits

GEOG F309--Digital Cartography and Geo-Visualization--4 credits

GEOG F435--GIS Analysis--4 credits

GEOS F458--Geoscience Applications of GPS and GIS***--3 credits

Geography Option II -- Landscape Analysis and Climate Change Studies:

a. Complete B.S. degree options, STAT F200X or 300, and prerequisite courses BIOL F115X, BIOL F116X, and CHEM F105X.

b. Complete the following Processes requirements (geomorphology, climate, ecology, systems):

GEOG F307--Weather and Climate--3 credits

GEOG F412--Geography of Climate and Environmental Change--3 credits

GEOG F418--Biogeography--3 credits

BIOL F271--Principles of Ecology***--4 credits

GEOS F304--Geomorphology***--3 credits

c. Complete one of the following Processes electives:

BIOL F467--Ecosystems of Alaska***--3 credits

- or BIOL F469 O--Landscape Ecology and Wildlife Habitat (3)***
- or NRM F370--Watershed Management (3)***
- or NRM F380 W--Soils and the Environment(3)***
- or a processes-oriented content course approved by Geography faculty advisor.
- d. Complete the following Patterns requirements (Field Methods, GIS/Remote Sensing Tools):
 - GEOG F309--Digital Cartography and Geo-Visualization--4 credits
 - GEOG F339--Maps and Landscape Analysis--3 credits
 - GEOG F435--GIS Analysis--4 credits
 - GEOS F458--Geoscience Applications***--3 credits
- e. Complete at least one of the following Patterns electives:
 - GE F471--Remote Sensing for Engineering***--3 credits
 - or GEOS F422--Geoscience Applications of Remote Sensing***--3 credits
 - or GEOS F434--Remote Sensing of the Cryosphere***--3 credits
 - or NRM F641--Remote Sensing Applications in Natural Resources***--4 credits
- f. Complete the following Senior Practicum requirements (program synthesis):
 - GEOG F488--Geographic Assessment and Prediction of Natural Hazards--3 credits
 - GEOG F489W--Senior Practicum: Field Studies in Landscape Analysis and Climate Change--4 credits

Geography Option III -- Geographic Information Science and Technology (GIS&T)

- a. Complete B.S. degree options, including prerequisite course, PHYS F103X.
- b. Complete the following GIS&T breadth:
 - CS F103--Introduction to Computer Programming***--3 credits
 - STAT F200X--Elementary Probability and Statistics***--3 credits
 - GEOG F339--Maps and Landscape Analysis--3 credits
 - GEOG F435--GIS Analysis--3 credits
 - GEOG F300--Internship in Natural Resources Management and Geography--3 credits
- c. Complete at least two courses of remote sensing electives:
 - GE F471--Remote Sensing for Engineering***--3 credits
 - GEOS F422--Geoscience Applications of Remote Sensing***--3 credits
 - GEOS F434--Remote Sensing of Cryosphere***--3 credits
 - NRM F641--Remote Sensing Applications in Natural Resources--4 credits
- d. Complete at least two courses of GIS electives:
 - GE F376--GIS in Geological and Environmental Engineering***--3 credits
 - GEOG F309--Digital Cartography and Geo-Visualization--4 credits
 - GEOS F458--Geoscience Applications of GPS and GIS***--3 credits
 - NRM F638--GIS Programming†--3 credits
- e. Complete at least two courses in Landscape electives:
 - BIOL F469O--Landscape Ecology and Wildlife Habitat***--3 credits
 - GEOS F304--Geomorphology***--3 credits
 - GEOS F408--Photogeology***--3 credits
 - GEOS F430--Statistics and Data Analysis in Geology***--3 credits

Minimum credits required--120 credits

* Students must earn a C grade (2.0) or better in each course.

** If used to fulfill core requirements, NRM F303X may not also count towards geography major.

*** Prerequisites required.

‡ 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

1. Complete the following:
 - GEOG F101--Expedition Earth: Introduction to Geography (3)
 - or GEOG F203--World Economic Geography (3)--3 credits
 - GEOG F111X--Earth and Environment: Elements of Physical Geography--4 credits
 - GEOG electives--8 - 9 credits
2. Minimum credits required--15 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)

Geography

School of Natural Resources and Agricultural Sciences
 UA Geography Program
 907-474-7494
www.uagp.uaf.edu

B.A., B.S. Degrees; Minor

Downloadable PDF

Minimum Requirements for Degrees: 120 credits

General Description

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 emerging technologies such as GIS, Remote Sensing, and Geovisualization 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 provide students with 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, geovisualization), and the synthesis of these core perspectives through an integrating capstone experience.

BA Description

The geography B.A. degree provides broad cultural training and background in the liberal arts with an emphasis on geographic understanding of the **Circumpolar North and Pacific Rim**. The B.A. prepares students for careers in management, policy, teaching, field-based research, regional planning, and private sector careers. The B.A. also provides an excellent foundation for advanced 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 (see #5, below), 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.

BS Description

Four specialized concentrations are available to students pursuing the B.S. degree: environmental studies, landscape analysis and climate change studies, geospatial sciences, and environmental decision making.

Environmental Studies provides the foundation necessary 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.

Landscape Analysis and Climate Change Studies concentration integrates and synthesizes courses in geography, climate, geologic and biological sciences, as well as geospatial sciences and technology. Students will gain a sound and interdisciplinary understanding of how environmental change influences landscape patterns and human activity and welfare, on both spatial (e.g. latitude, altitude) and temporal (e.g. past, future) scales. Senior practicum courses serve as integrating "capstone experiences" enabling students to apply what they have learned in real-world settings.

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 natural sciences.

Environmental Decision Making concentration emphasizes the tools, knowledge and experience needed to make sound environmental decisions, projections, and recommendations in a world of rapidly-changing environmental conditions. Required courses provide a solid foundation in natural resource management, global environmental and human interactions, economics, environmental law, environmental sciences, quantitative analysis, and research methods. From that base, students choose a Depth Area composed of a

structured sequence of specific courses (see Depth Area options below). Emphasis is on critical thinking, assessment of data quality, creative problem-solving, environmental scenario-modeling, and the ability to make critical decisions when complete information is not available. The curriculum is designed to reinforce skills, concepts, and principles by integrating their practical application across specific course sequences and within specific courses that focus on data collection and analysis. Each sequence culminates in a capstone senior research project or senior thesis designed to synthesize the skills and expertise students have gained in their chosen Depth Area.

Major -- B.S. Degree

1. Complete the general university requirements.
2. Complete the B.S. degree requirements. See individual B.S. concentrations for specific course requirements.
3. Complete the following required Geography Foundation ~~foundation~~ courses:*
 GEOG F101--Expedition Earth: Introduction to Geography--3 credits
 GEOG F111X--Earth and Environment: Elements of Physical Geography--4 credits
~~GEOG F312--People, Places, and Environment: Principles of Human Geography--3 credits~~
 GEOG F338--An Introduction to GIS--3
 OR
 GEOG F435 GIS Analysis--4 cr
~~GEOG F490W,O--Geography Seminar--3 credits~~
4. Complete one of the following ~~options~~ Geography Concentrations:*
Geography Option Concentration I -- Environmental Studies
 - a. Complete the following:
 GEOG F207--Research Methods and Statistics in Geography--3 credits
 GEOG F307--Weather and Climate--3 credits
GEOG F312--People, Places, and Environment: Principles of Human Geography--3 credits
 GEOG F339--Maps and Landscape Analysis--3 credits
 GEOG F402--Resources and Environment --3 credits
 NRM F303X--Environmental Ethics and Actions**--3 credits
GEOG F490W,O--Geography Seminar --3 credits
 - b. Complete ~~6 credits~~ two courses from the following Environmental Studies environmental studies electives:
 GEOG F463--Wilderness Concepts--3 credits
 NRM F303X--Environmental Ethics and Actions**--3 credits
 NRM F407--Environmental Law--3 credits
 - c. Complete ~~9 credits~~ three courses from the following Environmental System environmental system electives:
 ANTH F428--Ecological Anthropology and Regional Sustainability***--3 credits
 BIOL F271--Principles of Ecology***--4 credits
 BIOL/NRM F277--Introduction to Conservation Biology***--3 credits
 GEOS F304--Geomorphology***--3 credits
 NRM F375--Forest Ecology***--3 credits
 NRM F380W--Soils and the Environment***--3 credits

- d. Complete ~~3 credits from one of the following~~ Environmental Management environmental management electives:
 FISH F487W,O--Fisheries Management***--3 credits
 NRM F365--Principles of Outdoor Recreation Management--3 credits
 NRM F430--Resource Management Planning--3 credits
 NRM/WLF F431--Wildlife Law and Policy***--3 credits
 NRM F450--Forest Management***--3 credits
 NRM F480--Soil Management for Quality and Conservation***--3 credits
- e. Complete one of the following Techniques electives techniques courses:
 GEOG F301--Geographic Field Studies--3 credits
 GEOG F309--Digital Cartography and Geo-Visualization--4 credits
 GEOG F435--GIS Analysis--4 credits (can fulfill Techniques requirement only if NOT used in Geography Foundation)
 GEOS F458--Geoscience Applications of GPS and GIS***--3 credits

Geography ~~Option~~ Concentration II -- Landscape Analysis and Climate Change Studies:

- ~~a. Complete B.S. degree options, STAT F200X or 300, and prerequisite courses BIOL F115X, BIOL F116X, and CHEM F105X.~~
- a. As part of the baccalaureate core requirements, complete CHEM F105X, STAT F200X.
- b. As part of the B.S. degree requirements complete BIOL F115X and BIOL F116X.
- c. Complete the following required geography courses:
GEOG F312--People, Places, and Environment: Principles of Human Geography--3 credits
GEOG F490W,O--Geography Seminar--3 credits
- d. Complete the following Processes requirements (geomorphology, climate, ecology, systems):
 GEOG F307--Weather and Climate***--3 credits
 GEOG F412--Geography of Climate and Environmental Change***--3 credits
 GEOG F418--Biogeography***--3 credits
 BIOL F271--Principles of Ecology***--4 credits
 GEOS F304--Geomorphology***--3 credits
- e. Complete one of the following Processes electives:
 BIOL F467--Ecosystems of Alaska***--3 credits
 or ~~BIOL F469 O--Landscape Ecology and Wildlife Habitat (3)***~~
 or NRM F370--Watershed Management (3)***
 or NRM F380 W--Soils and the Environment(3)***
 or a processes-oriented content course approved by Geography faculty advisor.
- f. Complete the following Patterns requirements (Field Methods, GIS/Remote Sensing Tools):
GEOG F222--Fundamentals of Geospatial Sciences--3 credits
 GEOG F309--Digital Cartography and Geo-Visualization--4 credits
 GEOG F339--Maps and Landscape Analysis--3 credits
 GEOG F435--GIS Analysis--4 credits (can fulfill Patterns requirement only if

NOT used in Geography Foundation)

or GEOS F458--Geoscience Applications GPS and GIS***--3 credits

- g. Complete at least one of the following Patterns electives:
 - GE F471--Remote Sensing for Engineering***--3 credits
 - or GEOS F422--Geoscience Applications of Remote Sensing***--3 credits
 - ~~or GEOS F434--Remote Sensing of the Cryosphere***--3 credits~~
 - or NRM F641--Remote Sensing Applications in Natural Resources***--4 credits
- h. Complete the following Senior Practicum requirements (program synthesis):
 - GEOG F488--Geographic Assessment and Prediction of Natural Hazards--3 credits
 - GEOG F489W--Senior Practicum: Research Design and Presentation Methods--4 credits

~~Geography Option Concentration III -- Geographic Information Science and Technology (GIS&T) Geospatial Sciences (Remote Sensing and GIS)~~

~~Complete B.S. degree options, including prerequisite course, PHYS F103X~~

- a. Complete the following required Geography courses:
 - GEOG F312--People, Places, and Environment: Principles of Human Geography--3 credits
 - GEOG F490W,O--Geography Seminar--3 credits
- b. Complete the following ~~GIS&T~~ Geospatial breadth courses:
 - CS F103--Introduction to Computer Programming***--3 credits
 - GEOS F222--Fundamentals of Geospatial Sciences--3 credits
 - ~~STAT F200X--Elementary Probability and Statistics***--3 credits~~
 - GEOG F339--Maps and Landscape Analysis--3 credits
 - GEOG F435--GIS Analysis--3 credits
 - GEOG F300--Internship in Natural Resources Management and Geography--3 credits
- c. Complete at least two ~~courses of Remote Sensing~~ remote sensing electives:
 - GE F471--Remote Sensing for Engineering***--3 credits
 - GEOS F422--Geoscience Applications of Remote Sensing***--3 credits
 - ~~GEOS F434--Remote Sensing of Cryosphere***--3 credits~~
 - NRM F641--Remote Sensing Applications in Natural Resources--4 cr
- d. Complete at least two ~~courses of~~ GIS electives:
 - GE F376--GIS in Geological and Environmental Engineering***--3 cr
 - GEOG F309--Digital Cartography and Geo-Visualization--4 credits
 - GEOS F458--Geoscience Applications of GPS and GIS***--3 credits
 - NRM F638--GIS Programming†--3 credits
- e. Complete at least two ~~courses in~~ Landscape electives:
 - BIOL F469O--Landscape Ecology and Wildlife Habitat***--3 credits
 - GEOS F304--Geomorphology***--3 credits
 - GEOS F408--Photogeology***-- ~~3~~ 2 credits
 - GEOS F430--Statistics and Data Analysis in Geology***--3 credits

Geography Concentration IV. Environmental Decision Making

a. As part of the baccalaureate core requirements, complete CHEM F105X, STAT F200X, and NRM F303X.

b. As part of the B.S. degree requirements, complete the prerequisite courses BIOL F115X and BIOL F116X.

c. Complete the following EDM foundation courses:

Environmental and Human Systems:

NRM F101--Natural Resources Conservation and Policy--3 credits

BIOL F271--Principles of Ecology--4 credits

ECON F235--Introduction to Natural Resource Economics--3 credits

Quantitative Methods:

GEOG F207--Research Methods & Statistics in Geography--3 credits

NRM F340--Natural Resources Measurement and Inventory Field Data Collection and Analysis--3 credits

d. Complete one of the following Research Methods electives:

GEOS F430--Statistics and Data Analysis in Geology***--3 credits

NRM F465--Survey Research in Natural Resources Management***--3 credits

SOC F373W--Research Methods in the Social Sciences***--3 credits

STAT F402--Scientific Sampling--3 credits

e. Complete the following EDM Breadth courses:

NRM F204--Public Lands Law and Policy--3 credits

NRM F277--Introduction to Conservation Biology***--3 credits

HIST F411--Environmental History***--3 credits

GEOG F412--Geography of Climate and Environmental Change***--3 cr

GEOG F420--Geopolitics of Energy***--3 credits

GEOG F488--Geographic Assessment and Prediction of Natural Hazards--3 credits

f. Complete the following Integration courses:

NRM F290--Resource Management Issues at High Latitudes--2 credits

NRM F304W,O--Critical Thinking in Natural Resources Management--3 cr

GEOG F489W--Senior Practicum: Field Studies in Landscape Analysis and Climate Change--Research Methods--4 credits

GEOG F499 Senior Thesis / Senior Project--1-3 credits

g. Depth Area Electives.

Students will further focus their studies in Environmental Decision-Making by taking a minimum of 5 courses or 15 credits within one of several defined Depth Areas. Specific courses within each Depth Area are on file in the department. Consult with your advisor about which Depth Area is best for you and how to integrate the required courses into your schedule.

Depth Areas:

- i. Quantitative Decision Making (statistics, geospatial analyses, numerical modeling)
- ii. Environmental/Natural Sciences (additional courses in

- natural/environmental sciences)
- iii. Social Sciences and Policy (emphasis on social systems and policy)
 - iv. Environmental Management (forest, watershed, recreational management)
 - v. Energy Resource Management (energy resources, alternative energy, energy security, conservation and energy policy, energy economics.)
 - vi. Environmental Hazards: Assessment and Prediction (analysis, prediction, and mitigation of natural hazards)

Minimum credits required--120 credits

* Students must earn a C grade (2.0) or better in each course.

** If used to fulfill core requirements, NRM F303X may not also count towards geography major.

*** Prerequisites required.

‡ 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.

Minors

Geography offers two minors. One, in general Geography, allows students majoring in other fields to integrate geographic thought and also to perhaps focus on a geographic region as part of a minor. A minor in Geographic Information Systems (GIS) provides a valuable geospatial skill for students majoring in Natural Resource Management and other natural or social sciences.

1. Geography Minor

Complete the following:

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

~~or GEOG F203--World Economic Geography (3) 3 credits~~

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

GEOG electives--8 - 9 credits

(Refer to New Minor Form for Impacts, Justification, etc. for the following)

2. Geographic Information Systems (GIS) Minor

Complete the following:

GEOG F111X Earth and Environment: Introduction to Physical Geography--4 credits

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

GEOG F309 Digital Cartography and Geo-visualization--4 credits

GEOG F338 Introduction to GIS--3 credits

Complete one of the following:

GEOG F435 GIS Analysis--4 credits

GEOG F430 Google Earth and Neogeography--3 credits

NRM F369 GIS and Remote Sensing for Natural Resources

GEOG F300 Internship in Geography - in GIS (approved by Geog Dept Chair) --3 credits

or any GIS related course approved by Geography Department chair

Minimum credits required 17

D. ESTIMATED IMPACT

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

The proposed changes to our current concentrations within the Geography BS will have a positive impact on the overall quality of the Geography program. These revisions improve the overall coherence of the BS, clarify the scope of concentration areas, and provide our students with a more comprehensive set of knowledge and skills.

The Environmental Decision Making Concentration will positively impact the Geography BS students by offering a more rigorous, focused, cohesive pathway to study environmental problems, and prepare graduates to work in professions that require informed environmental decisions. Changing the name of the option better communicates the scope and intent of the program, and may attract more students to the Geography BS or to NRM degree programs. The emphasis on quantitative analysis, critical thinking, and the addition of quantitative courses is intended to attract more challenge-ready students into the program. All courses are currently taught within existing faculty workloads and no impacts on budget or space is expected.

One new course is being proposed in support of the EDM concentration; GEOG 499 Geograpy Senior Project/Senior Thesis (1-3 credits). This will not be a classroom course, but credit that students earn for independent work on a senior project or senior thesis under the supervision of a faculty advisor. Geography and NRM faculty will both be involved in project supervision, so the burden will be spread among a relatively large group of faculty.

The revisions to our existing GIST concentration were done in collaboration with Dept of Geology and Geophysics, in an effort to create more cohesive and integrative degree opportunities in Geospatial Sciences. The name of the concentration will change to better reflect content and to reflect the cross-departmental collaboration. One new course, *GEOG/GEOS F222 Fundamentals of Geospatial Sciences* is being proposed. This new introductory course was designed collaboratively, will be taught by faculty from both departments, and is required by students from both majors. Impacts on space, budget, and faculty are minimal and have been approved by department chairs and deans from both colleges (see GEOS/GEOS F222 New Course proposal).

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)*

Environmental Decision Making Concentration:

This change will impact only the Geography BS degree program, and may possibly attract NRM students who want to focus more on the quantitative aspects of environmental and resource decisions. The Departments of NRM and Geography are both in SNRAS, and are making integrative efforts to use each other's expertise to enhance each others' programs. Faculty from both departments collaborated on this proposal and will contribute to the curriculum. Impact is expected to be positive for both. This option integrates science, economics, policy, and quantitative methods to produce sound decision makers. Students serious about pursuing careers in environment / resource fields will be attracted to the rigorous foundation in critical thinking and quantitative analysis, and also by the opportunity to specialize in a depth area such as energy resources, environmental management, natural hazards, and others.

Geospatial Concentration:

The Geospatial Concentration was revised (from GIST) in collaboration with faculty from Geology and Geophysics, and is an effort to better integrate geospatial science course offerings across campus. Both programs will be impacted. The impact on Geography is minimal as the revision involves primarily a name change of the concentration and the addition of one course to the program. It was determined that one new course, *GEOG/GEOG 222 Fundamentals of Geospatial Sciences*, was needed to better prepare students for the concentration, integrate sub-fields of geospatial science, and to free upper division courses from needing to cover fundamental topics. Adjustment of course requirements will not increase the overall credit hours for Geography majors. Faculty from both departments will contribute to the design and/or delivery of the new course, and assignments fit into existing faculty workloads.

Both departments are making revisions to their respective programs and curriculum. Collaboration on concentrations areas ensures that programs are not duplicated, creates a stronger and more integrated concentration, and allows the sharing of resources and expertise across departments and schools. While Geography has had this concentration since 2006, this collaboration and program change will strengthen the Geography course offerings. At the same time, it will positively impact and benefit Geology & Geophysics by allowing them to offer a new concentration in geospatial sciences for *geology majors* without having to replicate, justify duplication, or compete with an established program. Students, while pursuing a shared concentration or emphasis area from their home department, will still be *majoring in their respective degrees* and will have all the required background and course work intended and expected within that degree. For example, geology majors will still take the standard series of required core geology courses, and be considered 'geologists' upon graduation. Likewise, Geography majors will have a standard Geography course load including human geography, cartography, and will be 'geographers'.

Department chairs and deans from both departments and schools have encouraged and supported this program integration, the sharing of courses, and the collaboration of faculty.

F. IF MAJOR CHANGE - ASSESSMENT OF THE PROGRAM:

Description of the student learning outcomes assessment process.)

These are considered minor changes within the Geography B.S. and all outcome assessment efforts are already in place for the major.

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.

Environmental Decision Making (EDM):

The decisions facing resource managers, scientists, policy makers and agencies increasingly require complicated and specialized data collection, critical evaluation of information and interpretations, knowledge of multiple fields, and above all sound abilities in critical thinking and quantitative analysis. Environmental decision makers often have to work with specialists from scientific, economic, policy, and law fields, while also communicating effectively with the public. The EDM concentration provides a solid foundation in critical thinking and quantitative analysis, fosters interdisciplinary thinking through breadth courses, and still allows students to pursue focused study of relevant topics such as energy management and natural hazards & risk assessment.

The formation of the EDM concentration has allowed us to create the program we have long envisioned, without eliminating the existing (and more flexible) Environmental Studies concentration. Environmental Studies remains available for students interested in a less quantitative and science-focused course of study and is uniquely tied into a cross-MAU shared degree program with UAS Juneau. We are still refining the linkage with UAS in the Environmental Studies concentration, but are not ready to finalize those changes yet. Allowing the Environmental Studies option to remain, and serve as a pioneering cross-MAU degree, we can assure that students remain able to transfer seamlessly between our schools within the Geography and Environmental Studies "Regents' Track."

Geospatial Sciences:

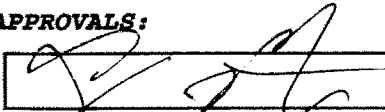
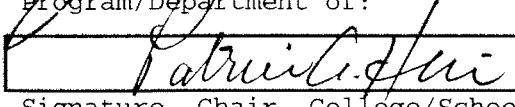
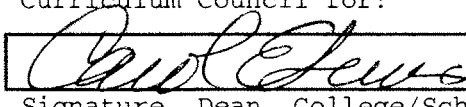
Collaboration and cooperation between departments offering similar areas of study is a productive and positive way to leverage resources, foster collegiality and collaboration, and strengthen programs by combining/sharing expertise and resources. The justification for this action has already been stated aptly in the course proposal for GEOS/GEOG 222 by Geology and Geophysics Chair, instigator and collaborator, Anupma Prakash:

"This program revision and course proposal is a result of such a cooperation and collaboration between the faculty and leadership of the Department of Geology and Geophysics and the UA Geography Program. With the increasing demand from the industry in the area of geospatial science (that involves remote sensing, GIS, GPS) students in both departments are increasingly gravitating toward taking more classes in these thematic areas. Students in both departments need some common core skills, followed by some specialized application courses that are specific for the respective departments."



For Geography, the program revisions have resulted in an additional introductory level class that improves the overall strength of our concentration. The name change better reflects the scope of the concentration and the cross-department collaboration. As stated above, this collaboration and shared option allows the Department of Geology & Geophysics to offer a B.S. concentration without duplicating or competing with an existing program. As a result of these revisions and the addition of GEOS/GEOG 222 to both departments' curricula, we are certain that the quality of programs offered by both departments will be improved.

Finally, collaboration among faculty and the sharing of resources sets an example for other departments that wish to strengthen their programs, but find themselves limited by 'territorial' claims of overlapping disciplines, and the unfortunate reality of competition among programs to generate credit hours.

APPROVALS:

	Date	10-7-2011
Signature, Chair, Program/Department of:	Geography	
	Date	7 Oct 2011
Signature, Chair, College/School Curriculum Council for:	School of Natural Resources and Agricultural Sciences	
	Date	10-10-11
Signature, Dean, College/School of:	Natural Resources and Agricultural Sciences	

ALL SIGNATURES MUST BE OBTAINED PRIOR TO SUBMISSION TO THE GOVERNANCE OFFICE

	Date	
Signature, Chair, UAF Faculty Senate Curriculum Review Committee		