

Submit originals and one copy to the Faculty Senate Office  
 Email electronic copy (with scanned signatures) to [jbharvie@alaska.edu](mailto:jbharvie@alaska.edu)

**REQUEST FOR A NEW MINOR**

**SUBMITTED BY:**

Department	Geography	College/School	SNRAS
Prepared by	P. Heiser, C. de Wit	Phone	7141 de Wit, 7068 Heiser
Email Contact	paheiser@alaska.edu	Faculty Contact	de Wit or Heiser

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:**

<b>TITLE OF MINOR:</b>	<b>Geographic Information Systems (GIS)</b>	
	<p><b>*Number of credits required for completion (minimum is 15):</b></p> <p>**Unless otherwise specified by the appropriate academic unit, a course may be used more than once toward fulfilling degree, certificate, major and minor requirements. Credit hours for these courses count only once toward total credits required for the degree or certificate. Certifying that [the student has] met all major and minor requirements is the responsibility of [the student's] department faculty, who notify the Registrar's Office." From the General University Requirements section of "How to Earn a Bachelor's Degree" in the UAF Catalog.</p>	<b>17</b>
	<p style="text-align: center;"><b>Do all the required courses currently exist?</b></p> <p><i>If not, list the corresponding New Course paperwork associated with this request:</i></p>	<b>no</b>

**GEOS/GEOG 222: Fundamentals of Geospatial Sciences (new course proposal)**

**A. DESCRIPTION OF THE PROPOSED MINOR. Include reasons justifying its creation; objectives of the minor and relationship of the required courses to those objectives.**

**Minor in GIS**

Geographic Information Systems or GIS has become an industry and agency standard for the collection, manipulation, display and query of all forms of topographic, geographic, climate, environmental (geology, plant communities, landforms) and human (population, culture, infrastructure) spatial data. From within SNRAS, we have been asked to create a minor in GIS for students majoring in Natural Resource Management. GIS perfectly complements, and is in fact often a required tool in most resource and management careers. It is logical that such a minor would equally complement other majors on campus by providing a valuable job skill that today is extensively used in many fields.

The proposed minor in GIS had been planned for the Fall 2011 curriculum review cycle. The recent development and proposal for a new course GEOG/GEOS 222 Fundamentals of Geospatial Sciences (part of a collaborative effort with Geology and Geophysics and a shared Geospatial Sciences *concentration* between departments) fits well in the GIS minor and adds a valuable introduction to geospatial sciences and breadth to the minor in GIS.

**B. PROPOSED MINOR REQUIREMENTS AS THEY WILL APPEAR IN THE CATALOG:**

See samples provided on page 3 of this form.

**Geographic Information Systems (GIS)**

**Complete the following:**

- GEOG F111X Earth and Environment: Introduction to Physical Geography (4 cr)**
- GEOG/GEOS F222 Fundamentals of Geospatial Sciences (3 cr)**
- GEOG F309 Digital Cartography and Geo-visualization (4 cr)**
- GEOG F338 Introduction to GIS (3 cr)**

**Complete one of the following:**

- GEOG 435 GIS Analysis (4 cr)**
- GEOG F430 Google Earth and Neogeography (3 cr)**
- NRM F369 GIS and Remote Sensing for Natural Resources**
- GEOG 300 Internship in Geography (if in GIS, and approved by dept chair)**  
**or any GIS related course approved Geography Dept chair**

**Minimum credits required 17**

**C. ESTIMATED IMPACT**

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

With the exception of GEOG/GEOS 222 Fundamentals of Geospatial Sciences, all courses currently exist and are taught by regular faculty in Geography or NRM in the School of Natural Resources and Agricultural Sciences. No impact on budget, workloads, or space is expected.

Please see new course proposal for GEOG/GEOS 222 for impacts related to that course. This minor was in the planning stages before the emergence of the Geospatial Sciences initiative, if the new class is not approved we would still offer the minor, and require GEOG 435 instead of making it an elective.

**D. 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)*

The NRM degree and concentrations / departments within SNRAS will all benefit by being able offer NRM majors a minor in GIS.

Students majoring in many other disciplines will benefit from the opportunity to complement their course of study with high demand knowledge and skills in GIS. Many federal and state agency jobs have minimum credit requirements in GIS and related coursework, and this minor will improve employment prospects for students applying for jobs in public and private sector fields such as wildlife management, range management, mining, fisheries, forestry, engineering, journalism, natural resource management, emergency management, insurance, environmental impact assessment, urban planning, etc. . It is also expected that a GIS minor on the books will increase enrollment in the courses listed. The opportunity earn a minor in GIS (from a range of disciplines and degrees) may attract more incoming students to UAF as well.

Geography currently offers a minor in "Geography" aimed mostly at students who wish to broaden their education with basic geography, regional, and/or environmental/human geography coursework. This new minor specifically in GIS allows students to have "GIS" on their diploma and clearly defines a set of classes, knowledge and skills acquired.

Geography faculty and faculty from Geology and Geophysics have worked collaboratively to develop a Geospatial Sciences *concentration* within their respective degrees. However, no other minor or certificate program in Geographic Information Systems currently exists at UAF. No negative impact on any programs or departments is expected.

**F. PERSONNEL DIRECTLY INVOLVED WITH THE MINOR:**

*List faculty currently teaching the required and elective (if any) courses, with a brief statement of duties and qualifications.*

**Required courses:**

GEOG 111X Intro Physical Geography (Patricia Heiser)

GEOG/GEOS 222 Fundamentals Geospatial Sciences (Anupma Prakash/Dave Verbyla)

GEOG 309 Digital Cartography and Geo-visualization (Keith Cunningham or Geography faculty)

GEOG 338 Intro GIS (Dave Verbyla)

**Options:**

GEOG 435 GIS Analysis (Dave Verbyla)

GEOG F430 Google Earth and Neogeography (John Bailey)

NRM F369 GIS and Remote Sensing for Natural Resources (Norm Harris)

NRM F638 GIS Programming (Dave Verbyla)

GEOG 300 Internship in Geography (approved by dept chair)

All faculty hold PhDs, are tenured, tenure track, and/or hold research positions at UAF.

**G. RELATIONSHIP OF THE PROPOSED MINOR'S OBJECTIVES TO THE "PURPOSES OF THE UNIVERSITY".**

*Include additional justifying information to support creation of the minor such as projected and present enrollments; need or public demand for the minor; support of other programs by the minor's creation, etc.*

**Justification of a GIS Minor at UAF:**

We believe that a minor in GIS will serve many students at UAF, allowing them to complement and strengthen their existing major with the highly marketable GIS skills, and geographic perspective, provided in this minor. We have had many requests over the past few years for a GIS minor from students majoring in NRM, Wildlife Biology, Fisheries, Marine Science, etc. A minor in GIS could potentially serve students in biology and wildlife, anthropology, earth science, engineering/mining, social sciences, all areas of management, business, and emergency planning.

GEOG F111X Earth and Environment (a university core natural science lab course) introduces students to the basic principles and driving forces of geologic, biologic, and climatic processes shaping the surface of the Earth. The course explores the interconnectedness of these systems, as well as the impact of human activity on the physical environment. The lab fosters critical thinking through the collection, analysis and evaluation of various types of data. Students are introduced to the concepts of spatial sciences and the practical use of topographic maps, aerial photos, satellite imagery, and some of the technological tools used to view, interpret, and query geographic patterns on Earth. A broad exposure to dynamic natural (geologic, biologic, climatic) systems and processes, and the patterns they create, makes this a perfect course to successfully segue students from various disciplines into the field of geography and the widely applied tools of GIS.

The other courses (GEOG/GEOS 222, GEOG 309, GEOG 338) emphasize the governing principles and tools used in mapping, visualization, and Geographic Information Systems. An

ability to choose among specified courses and/ or an internship experience, will allow students to shape part of the GIS minor toward their specific academic and career interests.

**Justification and Background in GIS (and application in many career fields):**

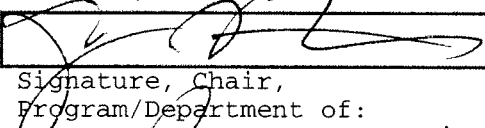
GIS allows us to view, question, interpret, understand, and visualize data in many ways that reveal relationships, patterns, and trends in physical, biological, climatic and human systems on Earth. The interdisciplinary nature of many problems and the increasingly global nature of human activity is moving the field of Geography and the central tool of Geographic Information Systems (GIS) to the forefront of research, management, and decision making at local, regional, national, and global scales.

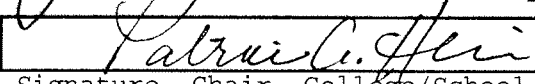
Having originally emerged from the discipline of Geography, GIS has become an essential tool in many disciplines from resource management, wildlife biology, planning, hazards and risk assessment, business, and medical and social science fields. Students with a minor in GIS will enter their respective careers with a basic understanding and skill set in GIS.

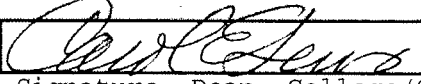
**Justification of Minor in Context of Career Training and Certification:**

This program satisfies the educational requirements of the GIS Certification Institute's professional GIS certification. Although there does not currently exist a national standardized GIS certification system, numerous institutes and agencies are working to define certification programs or minimal requirements for specific jobs. This minor is a first logical step in a planned development of certification program in GIS currently being developed in Geography program and School of Natural Resources and Agricultural Sciences. The result could be 'GIS certification' (however that takes shape nationally) earned via a minor in GIS, and/or undergraduate course work (e.g. via Geospatial Sciences concentrations), and/or possibly a post-graduate certification program.



**APPROVALS:**

	Date	10-7-2011
Signature, Chair, Program/Department of:	<u>Geography</u>	

	Date	7 Oct 2011
Signature, Chair, College/School Curriculum Council for:	<u>SNRAS</u>	

	Date	10-10-11
Signature, Dean, College/School of:	<u>SNRAS</u>	

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

	Date	
Signature, Chair, UAF Faculty Senate Curriculum Review Committee		

Final approval will be at the level of the Chancellor or Chancellor's Designee, following vote of approval by the Faculty Senate.