

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    | <b>Geology and Geophysics</b>   | College/School  | <b>Natural Science and Mathematics</b> |
| Prepared by   | <b>Erin Pettit and Carl Tape</b>  | Phone           | <b>907-474-5389</b>                    |
| Email Contact | <b><a href="mailto:pettit@gi.alaska.edu">pettit@gi.alaska.edu</a></b>     | Faculty Contact | <b>Erin Pettit</b>                     |
|               | <b><a href="mailto:carltape@gi.alaska.edu">carltape@gi.alaska.edu</a></b> |                 | <b>Carl Tape</b>                       |

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>Geophysics</b>  |           |
|  | <b>*Number of credits required for completion (minimum is 15):</b> | <b>21</b> |
| <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>Do all the required courses currently exist?</b>                | <b>No</b> |
| <p><i>If not, list the corresponding New Course paperwork associated with this request:</i></p>  |  |           |

F3770: Ice in the Climate System  
 F431: Foundations of Geophysics

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

The Department of Geology and Geophysics currently has a minor focused on the geology side of the department, but no minor available for those interested in Geophysics. We regularly get students interested in Geophysics because of its application to the oil industry, volcanoes, earthquakes, glaciers, climate, and related studies relevant to living and working in Alaska. Because of the prerequisites necessary to accomplish the coursework proposed for this minor, the most likely students to request it are Physics, Math, Chemistry, Engineering or similar majors. In particular the Geophysics minor can provide these students with rigorous, quantitative, intriguing Earth Science applications for the theories and fundamentals they are acquiring as students in these other departments. UAF has a world-renowned research program in geophysics. The minor would help connect the geophysics expertise to a pool of undergraduate students seeking to gain breadth and flexibility for future opportunities in either academia or the workforce.

**RECEIVED**

**SEP 27 2011**

**Dean's Office**

College of Natural Science & Mathematics

Governance

10/7/11 *KA*

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

See samples provided on page 3 of this form.

**Minor**

1. Complete the following\*:

GEOS F101X- The Dynamic Earth – 4 credits  
GEOS F112X- The History of Earth and Life – 4 credits  
GEOS F377 O- Ice in the Climate System – 3 credits  
GEOS F318- Solid Earth Geophysics- 3 credits  
GEOS F406- Volcanology – 3 credits  
GEOS F431- Foundations of Geophysics - 4 credit

Minimum credits required—21 credits

**C. ESTIMATED IMPACT**

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

Most of the courses in the Geophysics minor are already part of faculty workloads. GEOS 377O and GEOS 431 are new courses that are part of the proposed Paleontology Option, a new addition to the BS degree in Geoscience (see associated new course and program change paperwork). One of these courses (GEOS 377O) is being developed to fill the workload of a relatively new faculty member. The other (GEOS 431) is stacked with a graduate course that is the first course new graduate students take.

We hope that the new minor will increase enrollment in, and add diversity to, current and proposed courses in geophysics. We expect that most of the students in these classes will be Geoscience majors. We hope the minor will interest students in Physics, Math, Chemistry, and Engineering in Geoscience courses and provide them with a well-defined structure that will make their skills more marketable after they graduate. We do not anticipate attracting more than a few students in the minor annually, and therefore we do not foresee a need for larger classrooms in any of the courses purely as a result of the minor. Two of the courses (GEOS F377O and GEOS F431) do require use the Geology and Geophysics Department Computer Lab; depending on the number of students in these courses, we will possibly maximize use of this computer lab.

We have proposed an associated course fee to cover the costs for material in GEOS F377O (see new course proposal for GEOS 377O).

**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)*

We do not foresee the addition of a minor in Paleontology as having a significant impact on any other department, beyond providing a focused option for BS students seeking to add breadth to their major program. Because Geophysics lies at the intersection of geology and physics, many graduate programs in geophysics seek students with both strong geology and physics backgrounds – few other universities offer a geophysics undergraduate degree. Thus, the minor is not intended to recruit students interested in physics and engineering, but to provide physics majors with a background that will facilitate acceptance to and success in graduate studies of geophysics.

**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.

These courses are all taught by faculty within the Department of Geology and Geophysics whose research specializes in the topics covered in each course.

GEOS F101X: The Dynamic Earth: Rainer Newberry (an economic geologist) and Elisabeth Nadin (a tectonic geologist)

GEOS 112X: The History of Earth and Life: Sarah Fowell (an paleontologist) and Elisabeth Nadin (a tectonic geologist)

GEOS F377 O: Ice in the Climate System: Erin Pettit (a glaciologist)

GEOS F318: Geophysics of the Earth: Doug Christiansen (a seismologist)

GEOS F406: Volcanology: Jessica Larsen (a volcanologist)

GEOS F431: Foundations of Geophysics: Erin Pettit (a glaciologist) and Jeff Freymueller (a geodesist)

**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.

The Geophysics Minor highlights the diversity of topics housed beneath the Geoscience umbrella and provides students with a clear path to a concentration in geophysics. Because the minor consists of courses required for all Geoscience students (GEOS 101 and GEOS 112) and courses that are central to the Geophysics Option (all other courses), the minor places no additional demands on faculty workloads. Unless this minor attracts more than 5 students per year, we do not foresee a need for additional space. Therefore, while we expect a small increase in enrollments within the Geoscience degree program, the minor provides a service to students at little cost to the department or college.

The Geophysics Minor is intended to provide a path for students in Physics, Math, Chemistry, Engineering or other science who wish to learn in more depth about how the basic sciences can be applied to study the Alaskan landscape. As mentioned above, we regularly get students interested in Geophysics because of its application to the oil industry, volcanoes, earthquakes, glaciers, climate, auroras, environmental engineering, and related studies relevant to living and working in Alaska. This program will provide a connection between UAF undergraduate students and UAF's world renown expertise in Geophysics in research and graduate studies. In particular, this minor would provide a conduit for undergraduate students to engage in innovative research pertinent to Alaska's changing landscapes.

**APPROVALS:**

Signature, Chair, Program/Department of: Sarah Fowell Date 9/26/11  
Geology + Geophysics

Signature, Chair, College/School Curriculum Council for: [Signature] Date 10/5/11  
CNSM

Signature, Dean, College/School of: [Signature] Date Oct 7, 2011  
CNSM

**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.

**SAMPLE MINORS FOR REFERENCE FROM THE UAF CATALOG – 2009-2010:**

Taken from page 134, Art Degree Program:

**Minor**

1. Complete the following: \*  
ART F105—Beginning Drawing—3 credits  
ART F262—History of World Art—3 credits  
ART F365—Native Art of Alaska—3 credits
2. Complete one of the following: \*  
ART F161—Two-Dimensional Design—3 credits  
ART F162—Color and Design—3 credits  
ART F163—Three-Dimensional Design—3 credits
3. Complete one of the following: \*  
ART F201—Beginning Ceramics—3 credits  
ART F211—Beginning Sculpture—3 credits  
ART F268—Beginning Native Art Studio—3 credits
4. Complete one of the following: \*  
ART F207—Beginning Printmaking—3 credits  
ART F209—Beginning Metalsmithing and Jewelry—3 credits  
ART F213—Beginning Painting (Acrylic or Oil)—3 credits  
ART F3710—Digital Photography and Pixel Painting—3 credits
5. Minimum credits required—18 credits

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

Note: A minor in art for the B.A. or B.S. degree is available only to non-art majors.

Taken from Page 142, Communication Degree Program:

**Minor**

1. Complete the following:  
COMM F180—Introduction to Human Communication—3 credits  
COMM F330—Intercultural Communication (3)  
or COMM F351—Gender and Communication—3 credits
2. Complete communication electives at the F300-level or above—9 credits
3. Minimum credits required—15 credits

Note: Courses designated as social science or humanities that are taken for the minor may also be used to fulfill social science and/or humanities distribution requirements for the B.A. degree.

*These samples are for your reference and may be deleted from your submitted paperwork.*