Submit originals and one copy and electronic copy to Governance/Faculty Senate Office (email electronic copy to fysenate@uaf.edu)

REQUEST FOR A NEW MINOR

SUBMITTED BY:
Department: Mining and Geological Engineering
Prepared by: Rajvee Gunguli
Email: rgunguli@alaska.edu
Contact: Rajvee Gunguli

College/School: College of Engineering and Mines
Phone: 271

Call of Engineering and Mines
Contact: Rajvee Gunguli

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

PROGRAM IDENTIFICATION:

TITLE OF MINOR: Mining Engineering

*Number of credits required for completion (minimum is 15):* 15

"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.

Do all the required courses currently exist? Yes

If not, list the corresponding New Course paperwork associated with this request:

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

OBJECTIVE
To give non-mining engineering majors some background in mining engineering

WHY
The proposed minor alleviates two major problems: 1) shortage of skilled labor in the mining industry and 2) availability of significant capacity in many mining engineering courses.

The mining industry worldwide has a severe shortage of trained personnel. The entire United States produces only about 100-120 mining engineers every year. Therefore, the industry often hires non-mining engineers and trains them. We asked mine operators in surveys if they would hire a "non-mining" engineer or geologist if they had a minor in mining engineering. They were strongly supportive of hiring "non-mining" engineers/geologists that had the proposed minor because it saves them training time. Note that the industry currently hires "non-mining" engineers and geologists, but they play a limited role. In conclusion, the employers indicated that any engineering or geology major that had a minor in mining engineering would be significantly more employable in the industry than without. They, however, indicated that the minor would be very useful to them regardless of the major.

The second aspect of the minor is that it would increase enrollment in junior/senior level MIN courses that are currently under capacity. Most classes are non-lab based and, therefore, it is easy to bump up the enrollment without adding to the costs.

WHAT
Mining engineers are trained on a broad variety of topics since mining engineers are normally responsible for many aspects in a mine, such as mine ventilation, ground control, mine operation, economics, environmental laws and labor management. The minor will allow non-mining engineering majors to pick topics within mining engineering courses that are of interest to them as we will not restrict them to any specific courses. Two examples course sequences are given below:

Here is a sequence (pre-req in parenthesis):

MIN 301 (ES 208 & ES 307)
MIN 313
MIN 370 (ES 331)
MIN 407 (CHEM F106X; ENGL F111X: ENGL F211X or ENGL F213)
MIN 409
For engineering majors, the above is exactly 15 credits as they will have met other pre-reqs.

Another sequence:

MIN 370 (ES 331)
MIN 407 (CHEM F106X; ENGL F111X; ENGL F211X or ENGL F213)
MIN 408
MIN 409
MIN 443 (MIN 370)
MIN 482

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

Samples provided on page 2 of this form.

Complete:
1. Complete MIN electives at the F300-level or above—15 credits
2. Minimum credits required: 15 credits

C. ESTIMATED IMPACT

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

Most of the upper level classes in MIN are lecture type and run under capacity. They can be run at a significantly higher capacity without incurring additional cost.

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)

None.

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.

Sukumar Bandopadhay, PhD (Mining Engineering). PE: 9 month. tripartite. academic faculty. teaches MIN 103, 202, 225 (proposed course), 302, 637.
Gang Chen, PhD (Mining Engineering). PE: 9 month. tripartite. academic faculty. teaches MIN 104, 370, 443, 673 and ES 208.
Rajive Ganguli, PhD (Mining Engineering). PE: 9 month. tripartite. academic faculty. teaches MIN 482, 489, 490, 601 and ES 201.
Terril Wilson, PhD (Mining Engineering). PE: 9 month. tripartite. academic faculty. teaches MIN 106, 206, 226 (proposed course), 313, 407, 484
Paul Metz, PhD (Geological Engineering). PE: 9 month. tripartite. academic faculty. teaches MIN 408
Dan Walsh, MS (Mineral Preparation Engineering). PE: Teaches MIN 313 on a as-needed basis
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.

**Relationship to the "Purposes of the University"**

UAF's Academic Development Plan (2007-2012) states this goal at UAF: “Produce graduates who are job-ready in areas of high employer demand, and conduct training and research applied to the development, planning, and management activities of the State”. The proposed minor in mining engineering feeds directly into that since it produces graduates that will be in high demand in a key industry in this resources state.

**Need for the minor**

As stated earlier, the mining industry has a severe shortage of skilled labor, especially mining engineers. The industry resorts to hiring non-mining engineers and then training them to fulfill mining engineering roles. 
Mine operators around the state such as Usibelli Coal Mine, Barrick Gold etc were surveyed on their acceptability of the proposed minor. Their response was clear: they see the minor as a positive development. All respondents thought that a "non-mining engineer" was a lot more employable with the proposed minor than without.

**Projections**
The number of undergraduate MIN majors currently stands at 25. We expect 5 students to enroll in the minor. The minor will be a success even if we get one student since it is at no cost.

**APPROVALS:**

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

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<th>Signature, Chair, UAF Faculty Senate Curriculum Review Committee</th>
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Final approval will be at the level of the Chancellor or Chancellor’s Designee, following vote of approval by the Faculty Senate.