UNIVERSITY OF ALASKA FAIRBANKS
College of Engineering and Mines
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Office of the Dean

Memorandum

To: Susan Henrichs, Provost

Copy: Rob Lang, UAA SOE Dean
Fred Villa, UA AVP for Workforce Programs

From: Doug Goering, Dean

Date: 7/22/2008

Re: Operating budget proposal for FY10

The College of Engineering and Mines would like to forward a revised proposal for an incremental increase in operating budget funds starting in the FY10 fiscal year. This proposal is an outgrowth of the FY10 budget development process as envisioned by UA Statewide. As a part of that process the engineering deans at UAA and UAF were tasked to work with Fred Villa, Associate Vice-President for Workforce Programs at UA Statewide, to assemble a statewide engineering advisory body (referred to as the Joint Engineering Advisory Committee, JEAC) and then to work with that group to develop a statewide engineering budget proposal. The JEAC was split into three subcommittees to consider needs in the areas of faculty and staff, facilities, and advising and outreach. Each of these sub-committees held separate meetings during May and June. Based on this process an initial budget proposal was formulated in late June and forwarded to the UAA and UAF Provosts in early July. A subsequent prioritization process was then undertaken to identify the highest priority items and revise the total statewide request downward to the $1-2 M target range suggested for engineering. As a result of this process the original requests were categorized into highest, high, and medium priority components. Please refer to my July 3 draft memo for further details regarding the original requests.

The following paragraphs detail our prioritized needs in the areas of 1) human resources, 2) facilities and equipment, and 3) advising, outreach, and student success.

Highest Priority Requests

1) Human Resource Needs

The College of Engineering and Mines on the UAF campus currently employs 46 tenured or tenure-track faculty and several adjuncts or instructors in the five departments of Civil and Environmental Engineering, Electrical and Computer Engineering, Mechanical Engineering, Mining and Geological Engineering, and Petroleum Engineering. Teaching at the undergraduate and graduate levels makes up the largest fraction of workload for these faculty members (typically 60%). Traditionally many of the programs have had extra capacity in upper-level undergraduate and graduate level courses. Recent enrollment increases in most of the disciplines

in the college have eroded much of the excess capacity, particularly in the large freshman and sophomore level classes. To date these enrollment increases have been accommodated without additional faculty resources. However, in light of continuing enrollment increases and our goal to double engineering graduation rates in Alaska by 2012, it will be necessary to begin adding to the faculty resources of the college. Fall 2007 enrollment data produced by the UA Statewide Office of Institutional Research (See Table A.1. in Appendix A) shows that the number of freshmen enrolling in CEM programs increased 95% compared to fall 2006. Current data indicate an additional increase of 25% in undergraduate applications and 70% in graduate applications for the fall 2008 semester (See Table A.2. in Appendix A). In order to accommodate these enrollment increases and move the college forward we would like to request the following specific increments to the FY10 operating budget of the college.

- **Engineering Science Instructor ($100K)**

Recent enrollment increases have already begun to impact the general engineering science (ES) classes taught by the college. ES classes are not associated with individual departments, rather they typically serve a number of different degree programs in the college. A non-tenure track instructor is seen as an effective way to meet the demands of these lower level ES courses.

- **Half-time Engineering and Science Management Faculty ($60K)**

In the area of Engineering and Science Management (ESM) a new sequence of graduate level classes in construction management has recently been added. We are in the process of proposing a new graduate certificate program in this area. Demand for the program has been very strong, likely in part due to new continuing education requirements for practicing engineers in Alaska. There is a need for a half-time faculty member to support the growing enrollment in this area and the new certificate program.

- **Computer Engineering Faculty ($120K)**

The college began offering a degree in Computer Engineering in the fall of 2005. Since that time the number of students in the CpE program has increased substantially, and is now well in excess of 25 students with further increases indicated for the fall of 2008. A new faculty position is now needed to meet the demands of increased enrollment in this program.

- **Petroleum Engineering Faculty ($120K)**

Student enrollment in Petroleum Engineering grew 32% between 2005-06 and 2007-08 and we anticipate further enrollment growth this coming fall (current student registration trends are showing an increase of an additional 30% as compared to fall 2007 numbers for entering freshmen). In addition, we plan to begin offering some chemical engineering courses jointly utilizing petroleum and mechanical engineering faculty members. These trends and plans are placing additional demands on the petroleum engineering faculty and we anticipate that one additional faculty member will be needed in this area.

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- **Administrative and Development Support ($150K)**

In addition to faculty resources, the college is also critically short of staff support. This is in part a legacy of the 2004 formation of CEM which provided only limited support for the new Dean's Office. One existing staff position in the former School of Mineral Engineering and one staff position in the Institute of Northern Engineering were available to help with college administration. New funding for the dean was provided in the fall of 2005 when the position was filled, however the college has never had support for other staff or administrative needs such as a part-time associate dean, a public relations or development officer, or an equipment coordinator. These positions are critical for the future success and expansion of CEM programs.

- **Teaching Assistant Support ($180K)**

Finally, a modest request for teaching assistant support (six student positions in CEM and six student positions in core course areas) is also included to help meet the demands of increased enrollment.

2) Facilities

UAF is currently working on finalizing a needs study for the new Engineering and Energy Technology Building in conjunction with BDS Architects of Anchorage. Initial meetings were held in November of 2007 and more extensive planning studies are currently underway. The planning for new engineering and energy facilities on the UAF campus has also been discussed at recent meetings with the UAF Provost and Chancellor in preparation for an FY10 capital budget request. As these plans develop we will engage the JEAC in further discussions separately. The facilities budget request proposed in this document relates only to equipment maintenance and renewal.

- **Equipment Maintenance ($250K)**

The five academic departments within CEM have extensive instructional laboratories that are used for undergraduate instruction and graduate student research. The value of this academic equipment is in excess of $5M. Although useful life varies significantly depending on the nature of the equipment, it is reasonable to plan on a 20 year replacement cycle. Thus our proposed request for a fixed equipment renewal fund is 5% of the value of our equipment inventory. It should be noted that this will be submitted in conjunction with a $250K request from UAA for a total statewide request of $500K.

3) Advising, Outreach, and Student Success Needs

The areas of advising, outreach and student success are critical if we are to move successfully toward our goal of doubling engineering graduation rates by 2012. The successful recruiting program that the college implemented two years ago has resulted in substantial increases in incoming students. However, past data indicates that 4- and 5-year graduation rates are low due to problems with retention and low student success. With this in mind, CEM is embarking on a program to improve student advising and success. We are also working to expand our outreach efforts at the k-12 level, particularly focused on high school and middle school students. The following paragraphs describe our highest priority budgetary needs in these areas.

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- **Engineering Lab ($75K)**

Engineering Lab (tutoring for student success). This budget item will provide a needed tutoring lab for mainly freshman and sophomore students. Successful upper division students will be hired to tutor the lower division students in a host of beginning engineering (and associated) courses. The freshman and sophomore years are when we loose the majority of our non-continuing students, necessitating this retention and student success effort.

- **Summer Camp – ASRA Engineering Components ($75K)**

Alaska Summer Research Academy (ASRA) engineering components. This budget item seeks to expand a successful bridging recruitment program from the sciences to include engineering. Funding will be used to offer engineering sections of interest to young students, involving topics such as energy, environment, transportation, computers, etc.

- **Alaska Native Science and Engineering Program – ANSEP ($150K)**

This is the UAF part of a $300K request for additional funds to support the ANSEP program. ANSEP is a very successful program and an excellent example of an effective learning community. In light of the successful expansion of the program and increased private funding, additional state core support is needed to cover institutional commitments to the program.

High Priority Requests

- **Civil and Mechanical Engineering Faculty ($240K)**

Additional faculty resources are requested in the areas of Civil Engineering (one faculty position in environmental engineering) and Mechanical Engineering (one faculty position in alternative energy). These resources are needed to meet the demands of increased enrollment in these programs. These enrollment increases will tax faculty resources in CE, and ME over the next few years as this new cohort of students progresses through the respective programs.

- **Public Relations Officer ($100K)**

A public relations officer is needed to help with the generation and dissemination of college newsletters, alumni mailings, and web-based information.

- **Middle and High School Outreach Program ($50K)**

Faculty and staff support for middle school and high school outreach (robotics programs and engineering academy). This budget item will allow some faculty release time to enable energetic faculty members to spend time guiding projects in the public schools, leveraging existing projects such as the Project Lead The Way Engineering Academy at Lathrop High School and some of the ongoing robotics programs in various public schools.

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Medium Priority Requests

- **Equipment Manager ($75K)**

A staff position is needed to help with the management and operation of academic equipment for the college.

- **Summer Support for Engineering Programs ($50K)**

Summer sessions engineering support for field courses and out-of-sequence students. Most programs in the college have complex course requirements and find it difficult to offer required classes every semester. As a result, some students get a year behind because of difficulty with one course (for example, Statics and Dynamics are prerequisites to many succeeding engineering courses). This budget item seeks to address that situation by offering some critical courses during the summer, helping retain students by preventing them from having to wait a year before getting back on schedule. It will also fund needed summer field courses in geological engineering.

- **Engineering-Related Core Curriculum Revisions ($60K)**

There is a documented need for courses such as the trailing physics class if students are off by one semester. In past budget cuts to the physics department, this course was dropped which significantly impacts engineering students, especially now that many take one chemistry and three physics courses to satisfy their natural sciences requirements. Other issues include calculus with engineering applications and a core writing class for technical writing. Other specialized core courses could be developed that would better meet the needs of engineering students.

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Appendix A. CEM Admissions and Applications Data

Table A.1. CEM Admissions and Applications report for Fall 2007 as of September 27

Overall Applications and Admissions Report for Fall 2007
(counts all applications for students applying to multiple programs)

UAF College of Engineering and Mines		September 27, 2007					September 21, 2006					% Change	
		Applied	Admit	Denied	Review	Appl Withdr	Applied	Admit	Denied	Review	Appl Withdr	Applied	Admit
All UA Scholars	Enrolled	51	46	0	2	3	15	14	0	1	0	240.0	228.6
	Not Enrolled	24	8	0	14	2	16	2	0	12	2	50.0	300.0
	Total	75	54	0	16	5	31	16	0	13	2	141.9	237.5
UA Scholars 2007 Graduation Class	Enrolled	45	41	0	2	2	13	12	0	1	0	246.2	241.7
	Not Enrolled	14	3	0	11	0	16	2	0	12	2	-12.5	50.0
	Total	59	44	0	13	2	29	14	0	13	2	103.4	214.3
First-Time Freshmen	Enrolled	139	130	0	6	3	71	68	0	2	1	95.8	91.2
	Not Enrolled	76	35	0	29	12	53	13	0	20	20	43.4	169.2
	Total	215	165	0	35	15	124	81	0	22	21	73.4	103.7
All Undergraduates	Enrolled	186	168	0	12	6	109	99	2	5	3	70.6	69.7
	Not Enrolled	134	64	1	48	21	82	21	0	34	27	63.4	204.8
	Total	320	232	1	60	27	191	120	2	39	30	67.5	93.3
Graduates	Enrolled	28	26	0	1	1	31	30	0	1	0	-9.7	-13.3
	Not Enrolled	50	5	8	29	8	45	18	13	5	9	11.1	-72.2
	Total	78	31	8	30	9	76	48	13	6	9	2.6	-35.4

Table A.2. CEM Admissions and Applications report for Fall 2008 as of June 30

Overall Applications and Admissions Report for Fall 2008
(counts all applications for students applying to multiple programs)

UAF College of Engineering and Mines		June 30, 2008					July 2, 2007					% Change	
		Applied	Admit	Denied	Review	Appl Withdr	Applied	Admit	Denied	Review	Appl Withdr	Applied	Admit
All UA Scholars	Enrolled	35	31	0	0	4	38	35	0	2	1	-7.9	-11.4
	Not Enrolled	39	14	0	17	8	29	13	0	15	1	34.5	7.7
	Total	74	45	0	17	12	67	48	0	17	2	10.4	-6.3
UA Scholars 2008 Graduation Class	Enrolled	29	28	0	0	1	36	33	0	2	1	-19.4	-15.2
	Not Enrolled	29	10	0	12	7	17	6	0	11	0	70.6	66.7
	Total	58	38	0	12	8	53	39	0	13	1	9.4	-2.6
First-Time Freshmen	Enrolled	80	74	0	2	4	86	78	0	7	1	-7.0	-5.1
	Not Enrolled	138	56	0	54	28	88	58	0	23	7	56.8	-3.4
	Total	218	130	0	56	32	174	136	0	30	8	25.3	-4.4
All Undergraduates	Enrolled	110	96	0	5	9	104	92	1	9	2	5.8	4.3
	Not Enrolled	213	91	0	88	34	142	89	0	42	11	50.0	2.2
	Total	323	187	0	93	43	246	181	1	51	13	31.3	3.3
Graduates	Enrolled	7	6	0	1	0	5	4	0	1	0	40.0	50.0
	Not Enrolled	104	42	10	43	9	60	18	7	29	6	73.3	133.3
	Total	111	48	10	44	9	65	22	7	30	6	70.8	118.2

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Appendix B. FY10 Budget Request Guidelines and Process, March 26, 2008

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