

The following was passed at the May 4, 2009 Faculty Senate Meeting #159:

MOTION:

=====

The UAF Faculty Senate moves to approve a Graduate Certificate in Construction Management.

EFFECTIVE:            Fall 2009 and/or  
                             Upon Board of Regents approval.

RATIONALE:           See the full program proposal #19-GNP from the Fall 2008 review  
                             cycle on file in the Governance Office, 314 Signers' Hall.

Marsha Soum                      5-4-09  
President, UAF Faculty Senate                      Date

APPROVAL: \_\_\_\_\_  
                                 Chancellor's Office

DATE: \_\_\_\_\_

DISAPPROVED: \_\_\_\_\_  
                                 Chancellor's Office

DATE: \_\_\_\_\_

\*\*\*\*\*

**Brief Statement of Program:**

The objective of the Graduate Certificate in Construction Management is to increase the skills of graduate engineers and other construction professionals in order to accelerate their advancement into more responsible management positions. The program was designed with strong input from construction industry employers and will continue to regard the employer as a partner in the program. Career opportunities are integral to the program.

The graduate certificate is designed to provide the needed skill level by taking short academic courses during the winter season when construction work is slowed. Students can obtain the credential, the graduate certificate, in several years of part-time studies an attainable goal for working students.

Employers will influence the curriculum several ways. First, they already have been involved in the program development. Second, an industry advisory committee will advise the program. Third, the employers will sponsor courses that they believe are most useful to their employees/students. Fourth, the program is flexible enough that new courses can be added that are specific to particular employers or situations. The flexibility derives from the division of the main skills into rubrics, then requiring the students to take a certain amount of courses from each rubric. Within the rubrics, for the individual courses, the academy establishes the quality, but the employer determines the direction. The program will emphasize overarching virtues of ethical practices, respect and fair dealing for the other parties to the construction contract, and effective communications within the project and outside the project, especially to the public. The nature of the self-support and the employer involvement will dictate the success of the program - employers will not pay unless they feel the students/employees are gaining useful skills. Students will lose interest in the program, if they do not feel the program is aiding their advancement. Hence, the student and employer participation in the program is a key benchmark of its success.

Preliminary General Catalog layout copy

Graduate Certificate in Construction Management  
College of Engineering and Mines  
Department of Civil and Environmental Engineering  
(907) 474 xxxx  
<http://www.alaska.edu/uaf/cem/cee/>

Graduate Certificate  
Minimum requirements for degree: 15 credits

This program will advance the managerial skill level - the ability to make wise management decisions - of graduate engineers and other professionals in the construction industry to help prepare them for more responsible jobs.

Not for full-time students.

## Graduate Program - Graduate Certificate

### 1. Complete the following admission requirements:

#### a. Education and Experience:

- i. A four-year ABET college degree in engineering and at least two years construction experience, or
- ii. A four-year non-ABET degree in engineering, science or math field and four years construction experience, or
- iii. A four-year college degree and six years construction experience, or
- iv. At least ten years of management-level construction experience.

#### b. Recommendations. Provide three letters of recommendations, at least one from the applicant's line supervisor.

### 2. Complete the general university requirements (page 182), as adopted for this program

- a. Registration requirement: Students must take at least one course per year to remain in good standing in the program.
- b. There will be a construction management certificate faculty advisor or faculty committee appointed by the College of Engineering and Mines (CEM) dean who will be the student's graduate advisory committee.
- c. The student will complete a graduate study plan after completing five credits.

### 3. Complete a total of 15 credits of courses from the three main construction management rubrics and two main associated rubrics as approved by the student's advisory committee as follows:

- a. Human relations and communications, 4 to 6 credits
- b. Construction project management and scheduling, 4 to 6 credits
- c. Technical management of construction and costs, 4 to 6 credits
- d. Financial aspects of construction, 0 to 3 credits
- e. Other technical areas, 0 - 3 credits

### 4. Examples of suitable courses under each rubric are

- a. Human relations and communications, 4 to 6 credits
  - i. BA 607, Human Resources Management .....3
  - ii. ESM 601, Managing and Leading Engineering Organizations .....3
  - iii. BA 6XX, Big Picture, Systems Thinking and Organizational Dynamics ..... 1
  - iv. BA 6XX, Power and Politics and Its Effect On Motivation ..... 1
  - v. BA 6XX, Leading Teams ..... 1
  - vi. BA 6XX, Supervising Others ..... 1
  - vii. BA 6XX, The Legal Ethical and Practical Aspects of Personnel Decision Making ..... 1
  - viii. BA 6XX, Making Change ..... 1
  - ix. ESM 6XX, Project Interaction with Regulators, Stakeholders, and the Public ..... 1
- b. Construction project management and scheduling, 4 to 6 credits
  - i. ESM 609, Project Management .....3
  - ii. CE 620, Civil Engineering Construction .....3
  - iii. ESM 608, Legal Principles for Engineering Management .....3
  - iv. CE 6XX, Construction Claims Case Studies ..... 1

v.	CE 6XX, Scheduling for Construction Administration .....	1
vi.	CE 6XX, Network Scheduling Basics .....	1
vii.	CE 6XX, Project Network Scheduling Applications in Owner Organizations .....	1
viii.	CE 6XX, Construction Claims: Prevention, Analysis, and Dispute Resolution .....	1
ix.	CE 6XX, Project Management Organization and Delivery Systems .....	1
x.	CE 6XX, Contract Management for Alternate Project Delivery Systems .....	1
c.	Technical management of construction and costs, 4 to 6 credits	
i.	CE 451, Construction Cost Estimating and Bid Preparation .....	3
ii.	CE 603, Arctic Engineering .....	3
iii.	ESM 622, Engineering Decisions .....	3
iv.	CE 6XX, Managing Risk .....	3
v.	CE 6XX, Construction Estimating Basics .....	1
vi.	CE 6XX, Introduction to Construction Contract Administration ...	1
vii.	CE 6XX, Advanced topics In Cost .....	1
viii.	CE 6XX, Advanced Dirt Estimating .....	1
ix.	CE 6XX, Intro to Right Of Way Law, Procedures, and Issues .....	1
x.	CE 6XX, Construction-Related Law topics .....	1
xi.	CE 6XX, Arctic Construction .....	1
xii.	CE 6XX, Introduction to Safety Engineering.....	1
xiii.	CE 6XX, Quality Control .....	1
d.	Business and Financial aspects of construction, 0 to 3 credits	
i.	ACCT 602, Accounting for Managers .....	3
ii.	ESM 605, Engineering Economics.....	3
e.	Other technical areas, 0 to 3 credits	
i.	CE 603, Arctic Engineering .....	3
ii.	ENVE 644, Environmental Laws and Permitting .....	3
5.	Credits obtained toward the GCCM may be applied toward another master's degree.	

## Attachment 4

**RESOURCE COMMITMENT TO THE  
PROPOSED DEGREE PROGRAM**

**This program is will approach a self-support program, beyond the one-half faculty position. For example, if travel is needed, it would be in the budget for a particular course and the sponsor would need to pay for it. Many of the courses will be taught by adjuncts, and these will likewise be in the budget for each course. The exceptions are noted below.**

Resources	Existing	New		Total
	College/School	College/School	Others (Specify)	
Regular Faculty (FTE's & dollars)	None	One-half FTE \$53,000	Income from workforce \$40,000	\$13,000
Adjunct Faculty (FTE's & dollars)				(self-support)
Teaching Assistants (Headcount)				0
Instructional Facilities (in dollars and/or sq. footage)				0
Office Space (Sq. footage)	Adjunct office			½ adjunct office, 120 SF
Lab Space (Sq. Footage)				0
Computer & Networking (in dollars)			Support of UA Video Conferencing	Support of UA Video Conferencing
Research/ Instructional/ office Equipment (in dollars)				0
Support Staff (FTE's & dollars)	½ FTE \$35,000 or as needed		Offset by program income	
Supplies (in dollars)		\$3,000	From workforce \$3,000	0
Travel (in dollars)		\$10,000	From workforce \$10,000	\$0

## University of Alaska Board of Regents

### Program Approval Summary Form

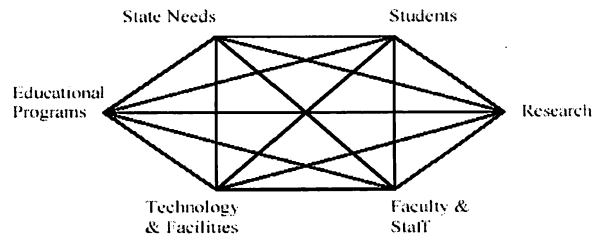
#### Requirements:

1. 2 pages or less
2. Must be a stand-alone document

MAU: UAF

Title: Graduate Certificate in Construction Management

Target admission date: Fall 2009



#### How does the program relate to the Education mission of the University of Alaska and the MAU?

This proposed program is a 15 credit graduate certificate in construction management that will provide advanced training for graduate engineers and other professionals in the Alaskan construction workforce. The program was developed in close coordination with Alaska construction industry employers and envisions continuing that relationship with employers sponsoring courses, providing classroom space, and participating in an industry advisory committee.

##### *\*Who promoted the development of the program?*

The program developed from the convergence of three trends: 1. UAF engineering's goal of increasing graduate-level courses for working engineers; 2. the nationwide trend of graduate engineering programs to "package" their graduate offerings for particular industries; and 3. the Alaska Department of Transportation's (DOT) need to provide advanced training for its engineers and other professionals who are making decisions that affect the physical and economic wellbeing of Alaskans. In spring 2008, with the support of a Workforce Development Grant, UAF Civil and Environmental Engineering (CEE) led the offering of five one-credit special topics courses in Fairbanks and, via video conferencing, in Juneau and Anchorage. Other team members were the UAF School of Management, UA Corporate Programs (UACP), UAF Center for Distance Education (CDE); and UA Video Conferencing Services.

##### *\*What process was followed in development of program (including internal and external consultation)*

UAF CEE had a series of meetings with upper managers of interior Alaska construction organizations in spring and summer 2007. These meetings identified likely course topics and meeting formats used in the spring 2008 courses. In May 2008, UAF CEE sponsored a meeting in Anchorage of state-wide major employers and others interested in the workforce training of graduate engineers and construction managers, who endorsed the key elements of this proposed program.

##### *\*Impact on existing programs and units across MAU and system, including GERs.*

Most of the students will already be four-year college graduates and this program will assume that they have the basic general education requirements. Both UAA and UAF have associates programs in construction management and UAA has a bachelor's program. The proposed program is a graduate program that will allow the next step in a career pathway and fill a gap between the bachelors and masters degrees.

#### What State Needs met by this program.

##### *\*Information describing program need and why existing programs in VA system are not able to meet it.*

There is currently a nationwide shortage of engineers and technical mid-level managers in all technical fields. The shortage is acute for the construction industry in Alaska with its extreme seasonally, remote project venues, and transient workforce. The shortage is often more acute for Alaska governments with less flexible personnel policies. There is broad agreement that education that is specific to construction management can accelerate the learning cycle for newer engineers into management ranks. For example, about one-third of UAF CEE graduates go into construction directly, and most of the rest of them that stay in Alaska are involved in the construction project cycle. However engineering accreditation requirements make it difficult for them to take construction courses. They enter the difficult world of construction management lacking formal courses in contract and procurement law, construction planning

and cost control, labor relations, and myriad other topics. In addition, most graduates need skills in communications special to the project environment, including dealing with the public.

Both UAA and UAF have graduate programs in engineering management, but not construction management, although some of the engineering management courses might be used in the proposed program. This program approaches a different demographic than the established masters programs, namely those college graduate students with several years of construction experience who are: primarily interested in construction, not attracted to the traditional MS programs, and with employers that will encourage participation in the new degree program.

*What are the Student opportunities and outcomes? Enrollment projections?*

This program is designed to reduce the students' time to obtain a credential and improve the students' current job performance and career expectations by offering courses that are specific to the industry needs. Offering the classes in venues convenient to the students invites employer participation. We expect that the typical class size will be 10 to 15 students and 5 to 10 students will obtain degrees each year.

*Describe Research opportunities:*

This is not a research program.

*Describe Fiscal Plan for development and implementation:*

*\*Identify funding requirement, sources and plan to generate revenue and meet identified costs:*

The overall funding plan is to approach self-support. The per credit charge will be double the standard tuition, with half going to CEM directly and half to UAF general tuition account (Fund I). Use of special tuition is warranted for this program, since it serves a special population and, generally, employers will sponsor most courses. UAF faces many demands on general fund dollars to support educational programs. Although there is demand for this program from the perspective of students and employers and significant state need, it does not have a high enough priority to compete for scarce state funds. Thus we propose to meet the needs by self support of the program. The employers will guarantee a minimum number of students. If there is capacity beyond that, students who do not work for that employer may register. Some courses will not be associated with an employer and will be "non-sponsored." The plan calls for administration of tuition and fees by UACP for corporate sponsors or CDE for individual students. The annual income, based on special tuition, offering 6 to 9 classes per year with 10 to 15 students would be \$35,000 to \$75,000. That, plus a workforce increment to the CEE budget should approach self-support, after the program is developed – two to three years.

*\*Indirect costs to other units (e.g. GERs, distance delivery)*

There should be no indirect costs other academic units. UAF SoM is participating in this as a partner of CEE, for SoM courses. The support of UA video conferencing is needed for classes that are offered in two locations. In the past, there has not been a charge for this. Students may use Blackboard and library services, but the costs per student should be no more than for typical students.

*\*Faculty and Staff*

UAF CEE needs another faculty member to help both with this program and other CEE construction management courses. The cost of this is approximately \$105,000/year. At some point, the program might need a half time clerical worker. CEM currently has budget for about half this amount. Program revenues could potentially help provide the other half. Program revenues will be needed for overhead expenses such as, start-up, administration, and travel.

*\*Technology, Facilities and Equipment*

Generally, we plan to offer the classes in employer's locations or at other central off-campus locations. In general, fees for that venue would be paid by the course sponsor. In general, there should be no special charges for facilities or equipment. UA video conferencing has helped with IT for remote classes without charge.