Graduate Certificates in Construction Management

2007 ALASKA ASPHALT PAVEMENT SUMMIT
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Comments on Engineering Education

• Incomplete education from bachelor’s
• Loosing mentoring class at work
• Market for standard M.S. programs
• Employer sponsored and CEUs
• The cost of programs versus their value
  – To employers
  – To student/employees

ASCE Body of Knowledge
Transportation

• Undergraduate basic transportation
• Highway design
• Airport/other design
• Traffic/planning
• Materials
• Other?

Ten pounds of stuff in a 5 pound bag

OJT and employer sponsored education

• Loosing mentors
• Time to Completion
• Lack program
• Lack credential
• Quality varies
• Participation varies
• Cost for Alaska
General decline in engineering postgraduate education

- General employment situation of engineers is good – sellers market
- Full-time MS does not pay for US Citizen engineers
- Evening courses are demanding

Student/employees Want

- Skills
- Confidence
- Advancement
- Money
- Sheepskin

Mismatch Problem

- Employers want more skills
  - And public, too
  - Generally willing to pay
- Employees want skills and compensation
- Need to match value to employer with "cost" to employee
  - Time and effort
Increase value of education?
• Education more specific to employer’s needs
• More convenient for students and employers
• Give credential sooner

Graduate Certificates
• Typically 12 to 15 graduate credits
  – Can count towards MS
• Focused on narrow area
  – Design of Pharmaceutical Facilities
  – Value Chain Enterprise Systems
  – Pharmaceutical Process Engineering
• Often distance delivered

AK DOT Classes
• Asked UAF to offer some construction management classes last spring
• UAF generated preliminary information
• Met with AK DOT to refine
• Gary Tyndall took plan to contractors, owners, AGC, etc.
Findings

• Emphasize management skills
• Target individuals who have
  – engineering or technical bachelor’s degrees,
  and
  – who have several years of subsequent work
    experience.
• Short, concentrated modules
  – completed and applied quickly.
• Convenient times and locations
  – during seasons that minimize conflict with
    construction activities.

First, Early, Draft of Certificate Program

Had Four Discipline Area
1. Human interactions and communications
   (4-6 credits)
2. Construction project management (4-6
   credits)
3. Construction contract administration (4-6
   credits)
4. Other Areas (3-4 credits total)

This Spring

• Offer six one-credit courses
• AK DOT will sponsor three of them
• All meet either Mon-Wed or Tue-Thru
  – 3:00 to 5:15 for six meetings
• At CDE Conference Room
  – Old Bowers Building
• The AK DOT courses are:
  – The Big Picture, systems thinking and organizational dynamics (Dr. Herman)
  – Scheduling for Construction Administration (Dr. Bennett)
  – Managing Risk (Dr. Perkins)
• The non-sponsored courses are:
  – Overview of Environmental Laws, Regulations, and Permitting (Dr. Perkins)
  – Power and politics, effect on motivation (Dr. Herman)
  – Construction Claims Case Studies (Dr. Bennett)

Distance
• Three of the classes will be delivered to Nome
• CDE direct to Nome campus
  – No parking problem
• Still looking for Anchorage anchor for other three
  – Need audio conference room
  – Could be other location

Questions to you
• Is this a one-time venture?
• Start of something new?
  – Graduate Certificate in Construction Mgt.
• Other certificates?
  – Pre-construction engineering
  – Transportation engineering
  – Environmental engineering
  – Others
• Need Board of Regents approval for new degree

Comments Welcome

• Email ffrap@uaf.edu
• Slides are available:
• http://www.faculty.uaf.edu/ffrap/Presentations/PresentationsIndex.htm

1.) Human interactions and communications
(4-6 credits)
• Ethics and professional responsibility
• Human resources laws and practice
• Incentive, recognition, and reward systems
• Labor relations
• Training and development programs
• Recruiting, selection, performance appraisal
• Leadership
• Delegation
• Written communications
• Oral communications
• Visual communications
• Negotiations
• Proposal writing
• Public involvement
• Public/media relations
• Personal skills/time management
### 2.) Construction project management (4-6 credits)
- Project life cycle
- Construction project delivery systems
- Project organizations
- **Project control, work breakdown structure**
- Project scheduling, CPM, programs
- Controls systems
- Managing (vs. preventing) changes, & changes affecting professional seals and code requirements
- Project initiation, coordination matrix, integration management
- Project/regulatory interaction, & inspections by ‘others’ “Stakeholders”
- Project termination
- Project selection
- Project Risk analysis and control

### 3.) Construction contract administration (4-6 credits)
- General law
- **Contract law**
- Public procurement law
- Changes and substitutions
- Claims
- General estimating
  - Methods
  - strategies
- Record-keeping, accounting management, and work acceptance
- Construction equipment management and accounting methods
- Financial statements and bonding
- Insurance
- Contract Administration, including
  - Contractor Payments, Change Orders, Force Accounts, Claims, Management, Project closeout, Specifications, Office procedures, Project safety issues, workers comp and record-keeping, Inspections and Quality Control

### Other (3-4 credits total)
1. Asset and maintenance management
2. Project economics and life cycle costing
3. Risk analysis
4. Emergency response
5. **Environmental law and permits/EIS**
6. **Project Development and Environmental Documentation**
7. Business practices including financial statements
ASCE Body of Knowledge

FIG. 1. Desired Skill Concentration for CE

Needed Education

FIG. 1. Desired Skill Concentration for CE

CE Sub-disciplines

- Structures
- Geotech
- Water
- Environmental
- Transportation
- Construction
Target students who

• Are interested in improving their current skills.
• Are considering new career paths within industry.
• Have been out of school for sometime, and want to resume their studies without committing to a full 30 credit Master's Degree program.
• Already hold an advanced degree, but wish to continue their studies in a new or related area.