

## Graduate Certificates in Construction Management

### 2007 ALASKA ASPHALT PAVEMENT SUMMIT

Dr. Robert A. Perkins, PE

---

---

---

---

---

---

---

---

## Comments on Engineering Education

- Incomplete education from bachelor's
- Losing 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

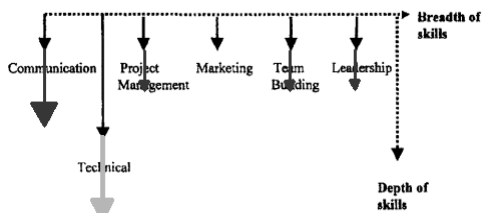


FIG. 1. Desired Skill Concentration for CE

---

---

---

---

---

---

---

---

## 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

- Losing 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



---

---

---

---

---

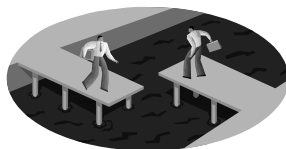
---

---

---

### 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](mailto: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

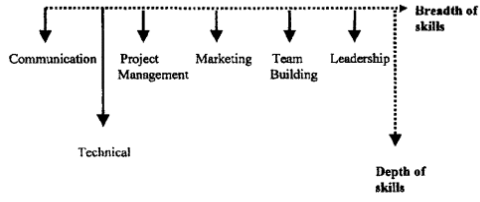


FIG. 1. Desired Skill Concentration for CE

---

---

---

---

---

---

---

---

# Needed Education

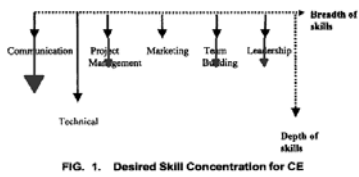


FIG. 1. Desired Skill Concentration for CE

---

---

---

---

---

---

---

---

# 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.

---

---

---

---

---

---

---

---