

Introduction

The new Graduate Certificate in Construction Management features a strong partnership between Alaska's construction project industry and the Civil and Environmental Engineering Department of UAF's College of Engineering and Mines. The industry, which includes federal and state agencies, construction contractors, and the architect/engineering design community, has identified education needs of their professional staff. There are a variety of courses available at UAF and other institutions within the context of MS programs, but these programs do not appeal to these students, most of whom have well-compensated full-time jobs already. So, the Graduate Certificate in Construction Management is built upon developing courses at convenient times and locations for these students and meeting their knowledge needs that were articulated by their employers. The overarching philosophy was that the employers would help design courses with value content, and UAF would supply the instruction and academic rigor to complete the education process. The New Degree Program Request articulated that philosophy and supplied an outline program and lists of courses. It noted that there were three-credit-courses already cataloged that would meet program requirements.

To date we have supplied several courses as Special Topics courses. Since these courses are discussed and planned with the students' employer, and this is a winter activity for most employers, the basic special topics procedure works well – each course gets an individual approval by the college curriculum committee and the dean. As a practical matter, however, applying for special topics approval shortly before each course is offered is difficult for the college curriculum committee, who enforce a rigid schedule with other courses. Since many of the course topics we offer are similar, despite being for different employers at different times, it is feasible to catalog these courses by a name and general description, with the understanding that particular employers and situations will have slightly different details. For example, we offered a basic course, construction claims case studies, several times. Then one employer, who has several bridge projects gone awry, asked for a similar course with a "bridge emphasis." Such minor changes are likely and add value to the course.

Here we apply for approval to enter the classes most that were either listed in the New Degree Program request, or taught as Special Topics courses. The first attachment is the proposed catalog entry for all the courses. These are listed under a course number with a general description of the topic followed by a list of one credit courses with some detail about each one-credit course. Following that, we have prepared a Form 1 for each course. For courses that have been offered as special topics courses we present the syllabus from an offering of the course. For courses that are proposed, we present an outline syllabus.



Attachment 1

Proposed Catalog Entries for New Construction Management Courses

Graduate New Courses (GNC)

CE F651 Construction Contract Administration

This series of one-credit courses are designed to offer the student instruction in administering construction contracts ethically, efficiently, and with respect for the rights and obligations of all the parties to the contract.

All the following are **1 Credit, Offered as Demand Warrants:**

44 CE F651A Introduction to Construction Contract Administration.

Project cycle, records and documentation for each stage, problems and their resolution.

45 CE F651B Construction Claims: Prevention, Analysis, and Dispute Resolution.

Legal and administrative framework to handling changes and disputes in relation to contract administration and field construction.

46 CE F651C Construction Claims Case Studies.

Case studies of construction claims specific to particular types of projects and situations.

47 CE F651D Topics in Construction Contract Administration

CE F652 Project Contracts

The one-credit courses of this series are designed to offer students instruction about the different types of contracts used to build projects and the differences in administration of various contract types.

All the following are **1 Credit, Offered as Demand Warrants:**

48 CE F652A Project Management Organization and Delivery Systems.

Project organizations, responsibility matrices, and information flow.

49 CE F652B Alternate Project Delivery Systems.

Different legal forms and contract types, and their consequence and applicability to Alaska procurement laws.

50 CE F652C Pre-construction Contracts.

Scope, scheduling, and changes to A/E contracts and other design-related contracts.

51 CE F652D Topics in Project Contracts.

CE F653 Project Scheduling and Controls

The one-credit courses of this series are designed to offer students instruction about the scheduling of projects, the common software, its use in tracking and control of projects and essential documentation in project controls.

All the following are **1 Credit, Offered as Demand Warrants:**

52 CE F653A Scheduling for Construction Administration.

Project tracking, changes, delays, and network scheduling basics. CPM and programs – MS Project or Primavera.

53 CE F653B Project Network Scheduling

Applications in Owner Organizations. Resource allocation and leveling, management and controls.

54 CE F653C Project Controls.

Work breakdown, structure, cost, schedule, quality, reporting, and contract language to support controls.

55 CE F653D Topics in Project Scheduling and Controls

CE F654 Project Estimating

The one-credit courses of this series are designed to offer students instruction about the estimation of work items in projects and their associated costs.

All the following are **1 Credit, Offered as Demand Warrants:**

56 CE F654A Construction Estimating Basics

Types of estimates appropriate for the project stage, vertical versus horizontal construction, and the usage of software, guidebooks, and indirects.

57 CE F654B Advanced Construction Estimating

Effects of inflation, risk analysis, and risk sharing on estimating.

58 CE F654C Advanced Dirt Estimating

Traditional survey control, GPS data utilization, and planning methods as they relate to quantifying and monitoring field excavation and fill activities.

59 CE F654D Topics in Project Estimating

CE F655 Risk Management

The one-credit courses of this series are designed to offer students instruction about the types of risks in projects and the management of those risks. Using the contract as risk transfer mechanism, and insurance and bonding issues.

All the following are **1 Credit, Offered as Demand Warrants:**

60 CE F655A Managing Project Risk

Sources of risk, allocation of risk via contract, entity responsible for management or risk, communicating risks to stakeholders, probability methods.

61 CE F655B Managing Business Risk

Sources of business risk. Effects of business models and plans, financing, bonding, and insurance on the entity, project, and project manager.

62 CE F655C Topics in Risk Management

CE F656 Construction Technical Areas

The one-credit courses of this series are designed to offer students instruction in a technical area of construction that is helpful in the planning and organization of projects. Several courses are related to Alaska-specific topics.

All the following are **1 Credit, Offered as Demand Warrants:**

63 CE F656A Arctic Construction

Permits, transportation, snow fences and ice roads.

64 CE F656B Introduction to Safety Engineering

Safety methods, laws, reporting requirements and implementing established plans and procedures.

65 CE F656C Quality Control

Contract clauses, theory, and practical means and methods to maintain the quality of a construction project.

66 CE F656D Introduction to Right Of Way Law

Procedures and issues as they apply to and effect the schedule, cost, communications and changes of a construction project.

67 CE F656E Construction-Related Law Topics

Liability, insurance, bonding, and business structure.

68 CE F656F Remote Construction

Estimating, management issues, such as cultural, workforce availability and training, supply train, cost, and logistics

69 CE F656G Environmental Laws and Permitting

Identification of applicable environmental regulations and permit requirements.

Introduction to the permit process, timeframes, costs and communication requirements.

70 CE 656H New Technology for Construction

Introduction to emerging technology, including GIS, GPS, and others, and their applications throughout construction projects.

71 CE 656I Topics in Construction

CE F657 Leadership

The one-credit courses of this series are designed to improve student's knowledge and skills in supervising others and leading projects.

All the following are **1 Credit, Offered as Demand Warrants:**

72 CE F657A Supervising Others

Technical employees, teams, job roles, training, performance management, motivation, goal setting, work practices, and relations with HR department.

73 CE F657B Managing Change Productively

Causes of resistance to change and strategies to avoid potential roadblocks to effective change management.

74 CE F657C Leading and Developing Cross-functional Teams

Establish member buy-in, shared expectations in schedule and quality, and team communication strategies.

75 CE F657D Collaborative Critical Thinking

The big picture – the environmental, social, and ethical aspects of decisions. Critical thinking, the communication of ideas, and vision development.

76 CE F657E Ethics

Engineering and business ethics in the real world, case studies. Ethics and liability, public relations, business decisions, negotiations, and marketing.

77 CE F657F Organizational Behavior in Projects

Understanding the interactions of Individuals, Groups, and Organizations in projects.

78 CE F657G Topics in Leadership

CE F658 Project Communications

The one-credit courses of this series are designed to improve the student's communication skills, both presentation skills and knowledge and skill in analyzing the recipients of the communicated information.

All the following are 1 Credit, Offered as Demand Warrants:

79 CE F658A Project Interaction with Regulators, Stakeholders, and the Public.

Public meetings, use of experts, and interaction with and management of the media.

80 CE F658B Project Proposals

Written and oral professional proposals for qualifications based selection.

81 CE F658C Alaska Rural Projects

Cultural issues, ANCSA, village and local governments, regional corporations, land ownership, local labor and resources.

82 CE F658D Information Technology

Modern IT and its effect on project management, documentation, and confidentiality.

83 CE F658E Stakeholders and Their Management

Identification of stakeholders and their involvement level, issues of risk, communications, notifications and meetings.

84 CE F658F Written Communications

Effective written communications, practice, types of communication, levels, and audience analysis.

85 CE F658G Negotiations

Basic negotiation skills, goals identification, preparation, teamwork, tactics, and practice.

86 CE F658H Effective Verbal and Visual Communications

Audience analysis, types and levels of communication, visual supports, and practice.

87 CE F658I Topics in Communications

CE F659 Personnel for Projects

The one-credit courses of this series are designed to offer students instruction about personnel management.

All the following are 1 Credit, Offered as Demand Warrants:

88 CE F659A Mentoring Skills.

How to "train the trainer," the role of HR department, case studies. Understand key principles, and learn skills and behaviors to enhance knowledge transfer.

89 CE F659B The Legal, Ethical and Practical Aspects of Personnel Decision Making.

Basic HR law and practical application to project personnel decisions. Sound ethical principles applied to the project cycle.

90 CE F659C Recruiting and Retention.

The manager's role versus the human resource department's role. Managing the selection process. Understanding why employees stay or leave - satisfiers and dissatisfiers.

91 CE F659D Labor Relations

Basic labor law. Federal and state laws and practices in Alaska.

92 CE F659E Topics in Personnel for Projects

CE F660 Program Management

The one-credit courses of this series are designed to offer students instruction about the larger context in which projects are conceived and built.

All the following are **1 Credit, Offered as Demand Warrants:**

93 CE F660A Planning and Project Definition

Defining project objectives, clarifying scope, establishing Project Management Plans, and handling non-engineering disciplines.

94 CE F660B Project Management Boot Camp

Introduction to project management. The project cycle, project controls, project scope, and managing personnel.

95 CE F660C Public Policy and Public Administration

The project in the public sector. Different levels of government and their roles in the project.

96 CE F660D Topics in Program Management