CME 494 – Decision-Making Analysis and Risk Management in Construction

Course Objective and Description:

The objective of this course is to provide students with recent research developments in the application of decision analysis, optimization, and risk management tools in construction engineering and management, including selection of construction mangers and contractors, site layout planning, quantifying impact of weather and change orders, optimal resource utilization, and optimal planning and control.

Students will learn creative and messy process of making decision-making and managing risk in construction. The approach will be distinctly pragmatic label given to ways for helping individuals and groups think through tough multidimensional choices characterized by uncertain science, diverse stakeholders, and difficult trade-offs. This is the everyday reality of construction management, yet many important decisions currently are made on an ad hoc basis which lacks a solid value-based foundation, ignores key information, and results in selection of an inferior alternative. In this course, we will review key methods and discuss case-study examples to lay out a compelling guide that will change how you think about making decisions and risk management in construction.

Selected Covered Topics:

Construction Decision-Making Analysis and Risk Management
1. Construction Investment Decisions
2. Bid/No Bid Decisions
3. Selection of Contractors, Subs, Suppliers
4. Optimizing Construction Resource Utilization
5. Optimizing Construction Resource Utilization
6. Optimal Scheduling for Repetitive Construction/A+B Highway Construction
7. Estimating Bid Markups in Construction
8. Time-Cost-Quality Tradeoff Analysis
8. Inventory Management
9. Impact of Weather on Construction