

Northwestern University
Executive Management for Design and Construction

Information Systems in Construction

PROJ_MGT 472

Course Objective:

This course is intended for mid-career professionals who wish to gain a deeper and broader awareness of technology and its impact on businesses in the construction and engineering industry. The course will cover technology subjects in a non-technical manner with an emphasis on selecting an appropriate combination of hardware and software tools to optimize a given departmental function.

Prerequisite:

It is expected that students will have an awareness of the ongoing struggle with technology in the construction and engineering industry as well as some knowledge about one or more products for departmental functions, such as estimating or scheduling.

Case Studies:

A case study will be provided each week and reading will be required in advance. The case studies will deal with either the deployment of technology in construction companies or the development of solutions by software companies.

Research:

Some primary research will be required either through web resources or specific inquiry into an individual's own company (e.g., an interview with the estimating department). Sharing the results of this research in class will be expected.

Writing Assignments:

Each student will be expected to write an essay on a subject of their choice from a series of optional topics. This can include an evaluation of a software product, lessons learned in an implementation project, or how a significant software decision was made or should be made. This assignment will be graded on the use of concepts from the course and how well ideas are conveyed.

Week-by-week description of the course:

Week 1 IT Trends in Construction / Automating ERP

- Historical perspective on automation in the industry
- Primary systems and solutions
- Role of software developers
- Construction and automation
- Trends in technology
- Management of IT
- Demonstrate ERP
- Historical perspective
- Application footprint
- Tier 1 vs Tier 2
- Developers and Direction

Week 2 IT Strategy and Planning / Automating Preconstruction

- Impact of technology
- Alignment with objectives
- Budgeting
- Performance
- Ambition
- Demonstrate Estimating
- Bid solicitation/Plan room/Prequal.
- Scheduling
- Bidding and budgeting
- Productivity

Week 3 IT Staffing and Leadership / Automation at the Job Site

- IT leadership and direction
- IT Management
- Typical IT organization
- Staffing Strategies
- Managing IT staff
- Demonstrate LaserScanning
- Time card capture
- Equipment
- Connectivity

Week 4 Infrastructure and deployment / Project and Document Management

- Outsourcing
- Data Center
- Cloud considerations
- Security and DR
- IT Governance Mgt of IT
- Demonstrate Project Mgt
- ECM technology
- Integrated vs Best-in-class
- Collaboration

Week 5 Specialized Applications / Software Selection and Implementation

- Equipment mgt.
- Service mgt.
- Scheduling
- Order processing
- Demonstrate Various
- RFP and Demonstrations
- Teams
- Licensing and negotiations
- Risks and mitigation

- Week 6 Automating Marketing and BD / Impact of BIM and VDC**
- Lead and opportunity mgt.
 - Marketing campaigns
 - Qualifications
 - Web presence and social media
 - Products/providers
 - Deployment
 - Strategy
 - Staffing
- Week 7 BIM and VDC / The Model**
- Role in Design
 - Role in Construction
 - Impact on Infrastructure
 - Impact on Staffing
 - Demonstrate Modeling
 - Considerations with the Model
 - Controlling the data
 - Prefabrication
- Week 8 Estimating and Preconstruction / Estimating Strategy**
- Estimating bidding
 - Prequalification
 - Bid solicitation
 - Conceptual budgeting
 - Impact on Estimating
 - Productivity-based estimating
 - Prequalification
 - Integration
- Week 9 Accounting and Administration / Content Management**
- Job Cost
 - Procurement to AP
 - Billing to AR
 - Human Resources
 - Financial Controls
 - Discovery
 - Content rules
 - Retention Rules
 - Content Sprawl
 - Workflow tools
- Week 10 Final Exam**
- A 25-question short-answer exam will be provided to students and they will have 24 hours to complete and turn in. Obviously, given the format of the class, this is open book and open note. The exam material will take this into account.

Grade Determination:

Final Exam 25%
 Writing Assignment.. 25%
 Class Participation 50%

Text:

No text required

Software:

No software required

NOTE: This course description explains the essence of the material covered. Canvas is the best source for the most up-to-date information about specific details for any given offering of the course.