Course Information

CM 610 Advanced Construction Management

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Description: Course addresses advanced study and application of estimating, scheduling, and project control principles utilized within the construction industry. Conceptual, assembly, and detailed estimating topics are addressed. Network, linear, matrix and bar chart schedules are analyzed. Project control topics including cost, resource, and schedule control are addressed and applied to cash flow analysis, project duration optimization, and resource balancing problems.

Objectives: After completing this course, you should be able to:

- Differentiate between the various types of estimates
- Calculate changes in cost due to time, location , and size
- Prepare a conceptual and square foot estimates
- Create an assembly; organize, develop, and present an assemblies estimate
- Use an assembly estimate for budgeting and value engineering purposes
- Recognize why unit price estimates are prepared and used
- Complete a quantity takeoff
- Obtain unit prices and prepare a unit price estimate
- Define scheduling and recognize when schedules are needed
- Differentiate among the various methods of scheduling
- Recognize the purpose and usage of bar chart, matrix, and network schedules
- Identify the steps in the planning stage of a project
- Identify the different types of construction activities
- Demonstrate how to construct a network diagram
- Determine the duration of an activity
- Define the terms early start, early finish, late start, late finish, and total float
- Calculate start, finish, and float times
- Define and calculate a projects critical path
- Define the objectives of a project control system
- Diagram the project control cycle
- Calculate the indirect costs of a project
- Calculate the optimum duration for a project
- Assess the relationship between resources and network schedules
- Integrate estimates with schedules to forecast project values

- Compile a cash flow analysis for a project
- Compile actual project data
- Monitor and update a projects budget and schedule
- Explain the importance of proper project documentation

Prerequisite: CM prerequisites are graduate standing or permission of instructor. The ability developed through undergraduate training to analyze cases, think critically, and express yourself in writing.

Text: *Managing the Construction Process: Estimating, Scheduling, and Project Control, 4th Ed.*, Frederick Gould; Pearson Prentice Hall, 2011; ISBN: 978-0138135966

Note: Text is subject to change as new texts and/or versions become available.

Course Site: https://d2l.sdbor.edu/
All course materials, schedules, learning objectives, assignments, and supplementary materials are posted to a D2L course site that is accessible to enrolled students beginning the first day of the semester.

Topical Coverage:

1. **Estimating -** the techniques and methods used in preparing the costs for a construction project in the context of the projects evolution from conceptual to detailed estimate. The quantity takeoff process, the establishment of unit prices, and the adjustment of costs for time and location.
2. **Scheduling** – addresses the value of schedules and provides examples of different scheduling methods. The Critical Path Method is covered in detail. Activity definition, the creation of a logic diagram, the calculation of activity durations, and network calculations are explained and demonstrated using Microsoft Project.
3. **Project Control** – examines the integration of schedule and estimate to provide timely project information.

Onsite or Distance? All CM course offerings serve both onsite and distance learners simultaneously in a common section (M840T).

Course Delivery: This course will be delivered in the HyFlex format. HyFlex represents an approach to creating and managing blended courses that provides students even greater choices when trying to manage their time. Hyflex, (Hybrid/Flexible), allows a student to choose whether they will attend a face-to-face class, or complete the required work online for any particular class date. Hybrid – combines both online and face-to-face teaching and learning activities. Flexible – students may choose whether or not to attend face-to-face sessions … with no "learning deficit."