CNST A220: CONSTRUCTION ESTIMATING

Item	Value
Curriculum Committee Approval Date	12/02/2020
Top Code	095700 - Civil and Construction Management Technology
Units	3 Total Units
Hours	54 Total Hours (Lecture Hours 54)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	No
Grading Policy	Standard Letter (S)

Course Description

Construction estimating including bid preparation, material quantity take-off and analysis, subcontractor bids, bidding practices and final bid form compilation and submittal. Transfer Credit: CSU.

Course Level Student Learning Outcome(s)

1. Describe the process of construction material quantity takeoffs and analysis, labor and material pricing and estimated quantities summations that including percentage margins for profit, overhead and contingencies.
2. Estimate material quantity takeoffs and labor and material pricing
3. Discuss contractor bid correlation, bidding practices and final bid form compilation and submittal.

Course Objectives

- 1. Discuss the estimating and bidding process in the home building industry.
- 2. Create material and labor quantities for simple grading and excavation in residential construction
- 3. Create material and labor quantities for residential form work, concrete flatwork and foundation construction.
- 4. Create material and labor quantities for simple grading situations in residential construction.
- 5. Create material and labor quantities for residential underpinning
- 6. Create material and labor quantities for residential wood and steel wall framing.
- 7. Create material and labor quantities for residential wood and steel roof framing.
- 8. Create material and labor quantities for residential insulation and weatherization.
- 9. Create material and labor quantities for residential interior and exterior finishes.
- 10. Create material and labor quantities for residential electrical, plumbing and mechanical installations.
- 11. Prepare bid estimates which include profit, overhead, contingency, labor and materials.

Lecture Content

Introduction General contracting Estimating as a profession Employment opportunities Math review Job bidding Profit Overhead Contingency Labor estimates Total bid package Excavation Earth cut and fill quantities Swelling and shrinkage Form work Flat work Stem wall foundation Poured-in-place foundation Concrete Flat work Foundations Circular columns Concrete block foundations Short-cut calculations Do-it-yourself concreting Mega-job concreting Underpinning Raised floor construction Floor joisting Wall frame Plate stock, studs, Headers, bracing Roof frame Common, hip, valley rafters, hip and valley jacks, ridge, fascia, barge Short-cut estimating methods Starter board, spaced sheathing Roof materials Area calculations Wood shakes, shingles Asphalt shingles Roof tiles Exterior materials Wood sidings Stucco Brick veneer Paint Insulation and weatherization Caulking and weather-stripping Insulation, blanket, batt, rigid, blown, poured Interior materials Floor coverings wall/ceiling coverings Electrical/mechanical Electrical fixtures Plumbing fixtures HVAC N. Hardware, nails, straps, hold-downs, ties O. Lumber lists - open topics P. Final problem

Method(s) of Instruction

- Lecture (02)
- DE Live Online Lecture (02S)

Instructional Techniques

Instruction methodologies will include, but not necessarily be restricted to, the following: 1. Detailed multimedia/lectures of each topic covered. 2. Student feedback during each lecture. 3. Detailed illustrative discussion of lecture handout and textbook information. 4. Guest speakers from the construction industry.

Reading Assignments

Students are assigned a weekly reading assignment - approximately 2-3 hours per week.

Writing Assignments

Essay assignments, report preparation, and projects. Students will spend approximately 2 hours per week on writing assignments.

Out-of-class Assignments

Students are given a weekly homework assignment to estimate quantities of materials from a set of plans with the procuderes that they learned the previous week. Students will spend approximately 2-3 hours per week on out-of-class assignments.

Demonstration of Critical Thinking

Graded homework (problem solving) and final exam (problem solving), attendance, quizzes

Required Writing, Problem Solving, Skills Demonstration

Essay assignments, report preparation, and projects

Eligible Disciplines

Construction technology: Any bachelors degree and two years of professional experience, or any associate degree and six years of professional experience.

Textbooks Resources

1. Required Petri, Robert W.. Construction Estimating: Residential Material Take-Off: Concrete, Framing Lumber, Finish Material, Hardware (Hardcover), ed. New York: Prentice Hall College Division, 0 Rationale: latest