

University of Toledo

Construction Engineering Technology

Master Syllabus

Course Title: Construction Estimating

Course Code & Number: CET-2060

Credit Hour Total: 3 **Weekly Contact Hours Lecture:** 3 **Lab Hours:** 0*
(*some instruction does occur in a computer lab)

Prerequisite(s): CET-1100, CET-1150

Text: Estimating in Bldg. Construction (8th Ed)
Dagostino & Peterson ISBN: 978-0133431100

Software: WinEst

Course Coordinator: Beall

A. **Course Description** (Approved catalog description.)

This course covers the fundamentals, concepts, and strategies used in the process of estimating construction costs. The organization of construction estimates and the bidding process will be discussed while focusing on materials, construction methods and labor strategies and costs. Use of spreadsheet software, as well as dedicated estimating and takeoff software will be explored in the recitation sections of the course.

B. **Related Program Outcomes:**

Upon successful completion of the Construction Engineering Technology program, graduates will have:

ABET/Student Outcomes

f. an ability to identify, analyze, and solve broadly-defined engineering technology problems;

Program Criteria Outcomes

2. A development of mathematical skills sufficient to solve and analyze technical problems associated with construction projects including building, highway and heavy construction.
3. The ability to demonstrate a thorough knowledge of common construction methods and design procedures associated with building, highway and heavy construction projects.
4. The ability to demonstrate a thorough knowledge of common construction materials- both their proper usage and proper testing procedures.
7. An understanding of working drawings for residential, commercial, highway and heavy construction projects.
8. An understanding of codes and specifications in the implementation of building and highway projects.
11. A development and understanding of the proper management techniques of construction projects relative to budget, schedule, safety, organization, and contractual obligations.

Evidence of the success of these outcomes is provided by the collection and analysis of:

- Final Cost Estimating Project

C. Course Objectives:

Upon the completion of the class a student will have:

1. An understanding of the construction project bidding process and the documents required for bidding.
2. The ability to plan and prepare a construction cost estimate.
3. A knowledge of overhead and up front construction costs.
4. The ability to utilize labor productivity rates and material rates to determine quantity takeoffs for construction items.
5. The knowledge of quantity details and labor productivity for earthwork, concrete, steel, wood, masonry and finish construction products.
6. The ability to utilize computer software to prepare a cost estimate.

D. Course Outline – Major Content Areas

1. Bidding Process (Introduction to Contract Documents, Scheduling, Estimate Planning, Estimate and Contract Terminology)
2. Labor Rates and Productivity
3. Overhead and Contingencies
4. Quantity Takeoff and Pricing of:
 - i) Earthwork & Site Items
 - ii) Concrete
 - iii) Masonry
 - iv) Metals
 - v) Wood
 - vi) Thermal & Moisture Protection
 - vii) Finishes
5. Cost Estimating Software
6. Value Engineering

E. Suggested Laboratory Assignment

1. Cost estimate/bidding project