



**School of Applied Engineering and Technology  
Department of Engineering Technology  
Construction Engineering Technology Program  
Course Syllabi**

**Course Number and Name:** CET 411, Construction Estimating

**Credits and Contact Hours:** Credits - 3; Contact Hours – 1.5 Hour Lectures, twice a week

**Course Coordinator's Name:** John A. Wiggins, P.E., Senior University Lecturer & Program Coordinator

**Text Book and Supplemental Materials:** Estimating in Building Construction, 9<sup>th</sup> Ed. , 2018, Dagostino & Peterson, Prentice Hall

**Specific Course Information**

**a. Brief Description of the content of the course**

Take off of quantities of materials from typical building and highway projects. Pricing for labor, materials, and equipment. Crew sizes, productivity and manpower leveling. Computerized cost estimating and take off methods. Prepare a complete bid estimate for a construction project.

**b. Prerequisites or Co-requisites:** CET 313, Construction Procedures I, CET 314, Construction Procedures II and CET 317, Construction Computing

**c. Course Status:** Required course

**Specific Goals for the Course**

**a. Specific Outcomes of Instruction**

By the end of the course students should be able to:

1. Understand the estimating process and develop various types of estimates.
2. Demonstrate the ability to estimate building construction costs of:
  - a. Materials
  - b. Equipment
  - c. Labor
3. Understand how the estimated costs can be utilized to develop a project bid and how to evaluate the bid.
4. Understand the fundamentals of accounting principles and how they apply to the construction process.
5. Understand the fundamentals of cash flow analysis and how it applies to the construction process
6. Demonstrate the use of Excel to perform the various tasks in the estimating process
7. Prepare a detailed cost analysis for a construction project
8. Understand and apply basic principles of construction cost analysis to a construction project
9. Perform standard economic analysis of a construction project

**b. Relation to Student Outcomes**

**Student Outcome 1** – An ability to apply the knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly-defined engineering problems appropriate to the discipline.

**Course Learning Outcome** – Student will be able to select the appropriate techniques to prepare a detailed construction cost estimate

**Student Outcome 2** – An ability to design systems, components, or processes meeting specific needs for broadly-defined engineering problems appropriate to the discipline.

**Course Learning Outcome** – Students will select and apply their knowledge in the process of estimating the costs of labor, material, and equipment for the building project.

**Student Outcome 4** - An ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes.

**Course Learning Outcome**- Students will analyze and interpret contract documents in order to prepare an accurate estimate for a project

**Student Outcome d** - Application of fundamental computational methods and elementary analytical techniques in sub-disciplines related to construction engineering.

**Course Learning Outcome** – As part of a team individuals will work together to prepare estimate of a building project.

**Student Outcome f** – Performance of economic analyses and cost estimates related to design, construction, and maintenance of systems associated with construction engineering construction and maintenance of systems associated with construction engineering.

**Course Learning Outcome** – Students will be able to utilize construction contracts, documents, and codes to prepare detailed construction cost estimates

**Student Outcome g** – Selection of appropriate construction materials and practices

**Course Learning Outcome** – Students will be able to utilize plans and specifications to estimate the appropriate materials and practices in order to prepare an estimate

**Brief list of topics covered**

The estimating process, types of estimates, fundamentals of quantity takeoff, estimating labor costs, estimating material costs, estimating equipment costs, work breakdown estimating, project estimating, bid preparation and analysis, construction accounting, cash flow analysis.