CET 411 – Construction Estimating
Fall 2025

COURSE NUMBER CET 411

COURSE DESCRIPTION Construction Estimating

COURSE STRUCTURE (3-0-3) (lecture hr/wk - lab hr/wk – course credits)

COURSE DESCRIPTION An introduction to the methods and procedures utilized in preparing and compiling a bid estimate. Takeoff of quantities of materials from typical building and highway projects. Pricing for labor, materials, and equipment. Crew sizes, productivity and labor leveling. Cash flow analysis, computerized cost estimating and take off methods.

PREREQUISITE(S) CET 313 (Construction Procedures I), CET 314 (Construction Procedures II), CET 317 (Construction Computing)

REQUIRED MATERIALS Estimating in Building Construction, 10th Ed. Dagostino & Peterson, Prentice Hall,

COMPUTER USAGE Word, Excel, PowerPoint

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

1. Understand the estimating process and develop several 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.

CLASS TOPICS 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.

STUDENT OUTCOMES The Course Learning Outcomes support the achievement of the following CET Student Outcomes and TAC of ABET Criterion 9 requirements.

Student Outcome A – 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 B – 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 D - An ability to conduct standard tests, measurements, and experiments to analyze and interpret the results to improve processes.

Student Outcome h-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 an estimate of a building project.

Student Outcome J-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 K – Selection of appropriate construction materials and practices
Course Learning Outcome –

GRADING POLICY

Homework/Projects	40%
Tests (or Midterm)	30%
Final Exam	30 %

Note: Makeup exams are only allowed under extreme circumstances at the discretion of the instructor.
Note: A student cannot pass the course if:

1. You have failing grades on the test(s) and final exam.
2. You have not taken all the tests and the final exam.

Note: Open book tests are open book not open computer or other electronic devices.
Note: Dates of tests will be announced in advance.

ACADEMIC INTEGRITY

"Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is prohibited and devalues the degree on which you are working. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at: *http://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf*.

Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. ***Any student found in violation of the code by cheating, plagiarizing, or using any online software***

inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension, or dismissal from the university. *If you have any questions about the code of Academic Integrity, please contact the Dean of Students Office at dos@njit.edu"*

MODIFICATION TO COURSE The Course Outline may be modified at the discretion of the instructor or in the event of extenuating circumstances. Students will be notified in class of any changes to the Course outline.

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CLASS HOURS

Tuesday	6:00 PM – 8:50 PM	CKB 223

HOMEWORK - IMPORTANT

Homework is **due the week following the date they are assigned and must be given to the instructor.** The homework must show how you derived the answers – they will be graded. They will not count towards your final grade if **they are turned in more than one week late**. Homework must be handed in individually.

Homework assignments will be emailed to the student with the due date during the semester. It is the responsibility of the student to keep up with the assignments.
Homework assignments will be used to assess the student's progress during the course as well as to be employed to assess the quality of the student's efforts and understanding of the material presented. All homework will be graded.

Homework will be reviewed in class as a review for the student.

Computational homework must be legibly hand lettered in pencil or ink and shall be supplied on gridded computational paper.

If the student is submitting a computer printout it must be on 8.5 X 11 paper.

All assumptions must be shown and if references are used, they must be cited.

Remember I cannot grade what I cannot read or determine what the steps are that you have taken to get your results.

You will be required to scan your assignments and submit them electronically.

OFFICE HOURS

Office hours will be available, by appointment, The student should contact the professor to arrange a meeting.

As usual, a student (or your instructor) may drink a beverage (i.e., coffee, water, a carbonated drink, etc.) in the classroom. **Eating is not permitted**.

GRADING LEGEND

GRADE	NUMERIC RANGE
A	90 to 100
B+	85 to 89
B	80 to 84
C+	75 to 79
C	70 to 74
D	60 to 69
F	0 to 59

COURSE OUTLINE

Week	Class Date	Textbook	Assignment	Topics
1.	9/2	Chapters 1 to 6 Chapter 7		General Introduction – review of syllabus and textbook Introduction to the estimating process Estimating Labor Costs – Chap. 7
2.	9/9	Chapter 7	TBD	Estimating Labor Costs – Chap 7
3.	9/16	Chapter 9 Chapter 10	TBD	Specialty Contractors Estimating Excavation
4.	9/23	Chapter 10	TBD	Estimating Excavation
5.	9/30	Chapter 11	TBD	Estimating Concrete
6.	10/7	Chapter 11	TBD	Estimating Concrete
7.	10/14	Chapter 12 Chapter 13	TBD	Estimating Masonry Estimating Metals
8.	10/21	Chapter 13	TBD	Estimating Metals
9.	10/28			Estimating Wood
10.	11/4	Chapter 14	TBD	Estimating Wood
11.	11/11	Chapter 15 Chapters 16	TBD	Estimating Roofing Estimating Doors & Windows
12.	11/18	Chapters 17 Chapters 18, 19, 20	TBD	Estimating Finishes Estimating Building Systems
13.	11/25	**Thursday Classes**		
14.	12/2	TBD		
15.	12/9			Final Review

TUESDAY, NOVEMBER 25 **THURSDAY CLASSES MEET**
WEDNESDAY, NOVEMBER 26 **FRIDAY CLASSES MEET**
THURSDAY, DECEMBER 11 **LAST DAY OF CLASSES**
FRIDAY, DECEMBER 12 **READING DAY**
TUESDAY, DECEMBER 16 **FINAL EXAM**