

## Course Number and Title: CMT 234 Cost Estimating/Planning

**Campus Location:**

Georgetown, Dover, Stanton

**Effective Date:**

2022-51

**Prerequisite:**

ENG 101, (MAT 183 or higher or concurrent), ((AET 125, CET 135) or (CET 125, CET 135) or (CMT 111,CET 135))

**Co-Requisites:**

none

**Course Credits and Hours:**

3.00 credits

2.00 lecture hours/week

2.00 lab hours/week

**Course Description:**

This course covers material lists, take-off quantities of materials, and labor costs from residential construction documents. Different methods of estimating are presented, including using productivity software to project costing and scheduling.

**Required Text(s):**

Obtain current textbook information by viewing the [campus bookstore - https://www.dtcc.edu/bookstores](https://www.dtcc.edu/bookstores) online or visit a campus bookstore. Check your course schedule for the course number and section.

**Additional Materials:**

See supplemental course information.

**Schedule Type:**

Classroom Course

Web Conferencing

Hybrid Course

**Disclaimer:**

None

**Core Course Performance Objectives (CCPOs):**

1. Compute practical geometry used to estimate building material quantities. (CCC 2, 4, 6; PGC 1, 5)
2. Measure, calculate, and convert various units of measure. (CCC 2, 4, 6; PGC 1, 4)
3. Read and interpret architectural and engineering construction documents. (CCC 2; PGC 2)
4. Classify methods of cost estimating for different project phases. (CCC 2, 4; PGC 2, 5)
5. Predict impacts of indirect costs, economic, and weather conditions on preparing construction estimates. (CCC 1, 2, 4; PGC 1, 3, 5)
6. Calculate items of site work, excavation, and concrete. (CCC 2, 4, 6; PGC 1, 4, 5)
7. Group materials using the Construction Specification Institute (CSI) MasterFormat. (CCC 2, 6; PGC 1)
8. Categorize and compute quantities and costs of labor and equipment. (CCC 2, 4, 6; PGC 1, 4)
9. Prepare checklists and complete a construction estimate for a typical wood-frame residence. (CCC 1, 2, 4; PGC 1, 2, 3, 4, 5)
10. Use standard industry references, information resources, and software to prepare cost estimates and schedules. (CCC 1, 2, 4; PGC 1, 2, 3, 5)
11. Demonstrate professional and ethical conduct as expected in industry. (CCC 1, 2, 3, 4, 5, 6; PGC 3, 5)

See Core Curriculum Competencies and Program Graduate Competencies at the end of the syllabus. CCPOs are linked to every competency they develop.

**Measurable Performance Objectives (MPOs):**

Upon completion of this course, the student will:

1. Compute practical geometry used to estimate building material quantities.
  1. Calculate areas of common 2D shapes, including rectangles, triangles, circles, and other shapes as required.
  2. Determine volumes of common 3D shapes, such as cubes, rectangular prisms, cylinders, and other shapes as required.
  3. Estimate volumes based on determination of cross sectional areas multiplied by length.
  4. Solve for surface areas and volumes for complex 2D and 3D shapes.
2. Measure, calculate, and convert various units of measure.
  1. Define and describe units of measure used in the construction industry.
  2. Measure, calculate, and convert units of various construction materials.
  3. Explain nominal versus actual size.
3. Read and interpret architectural and engineering construction documents.
  1. Read and interpret site plans, foundation plans, floor plans, elevations, sections, and details.
  2. Review and explain structural, mechanical, electrical, and plumbing drawings.
  3. Identify and interpret specifications.
4. Classify methods of cost estimating for different project phases.
  1. List and describe methods to prepare rough cost estimates.
  2. Identify and give examples of methods to prepare approximate cost estimates.
  3. Name and summarize methods to prepare detailed estimates for bids.
  4. Calculate contingencies for estimates and bids.
5. Predict impacts of indirect costs, economic, and weather conditions on preparing construction estimates and schedules.
  1. List and describe how various economic conditions impact construction costs, planning, scheduling, and financing.
  2. Identify and give examples of indirect costs, overhead, and profit.
  3. Summarize typical weather conditions and how they impact cost estimates and schedules.
6. Calculate items of site work, excavation and concrete.
  1. Interpret contours, elevations, inverts, and other site and excavation quantity information.
  2. Name volumetric properties of undisturbed, excavated, and compacted soils.
  3. Calculate cut and fill.
  4. Describe site, excavation, and concrete methods, materials, and equipment.
  5. Compute quantities and costs of site work, excavation, and concrete.
7. Group materials using the Construction Specification Institute (CSI) MasterFormat.
  1. Describe MasterFormat and the organization of divisions as they apply to cost estimating.
8. Categorize and compute quantities and costs of labor and equipment.
  1. Calculate quantities and costs of concrete and masonry.
  2. Calculate quantities and costs of items of wood-frame construction.
  3. Calculate quantities and costs of insulation, weatherproofing, exterior materials and finishes, and windows and doors.
9. Prepare checklists and complete a construction estimate and schedule for a typical wood-frame residence.
  1. Develop a checklist itemizing materials needed for construction.
  2. Interpret drawings to create a checklist for construction.
  3. Interpret drawings, perform calculations, and organize quantities using MasterFormat to compile a construction estimate.
10. Use standard industry references, information resources, and software to prepare cost estimates and schedules.
  1. Use standard industry references to determine costs for materials and time and cost estimates for labor and equipment.
  2. Select websites, publications, books, periodicals, catalogues, and other industry sources to research materials, labor and equipment.
  3. Use productivity software to prepare a cost estimate and construction schedule for a typical wood-frame residence.
11. Demonstrate professional and ethical conduct as expected in industry.
  1. Identify the need for self-discipline and time management in technical industries.
  2. Communicate and function effectively as a member of a team.

**Evaluation Criteria/Policies:**

The grade will be determined using the Delaware Tech grading system:

90	-	100	=	A
80	-	89	=	B
70	-	79	=	C
0	-	69	=	F

Students should refer to the [Student Handbook - https://www.dtcc.edu/handbook](https://www.dtcc.edu/handbook) for information on the Academic Standing Policy, the Academic Integrity Policy, Student Rights and Responsibilities, and other policies relevant to their academic progress.

**Final Course Grade:**

Calculated using the following weighted average

Evaluation Measure	Percentage of final grade
Chapter Tests (Summative, equally weighted)	25%
Course Project (Summative)	30%
Chapter Activities (including discussion boards for online classes) (Formative)	20%
Chapter Quizzes (Formative)	10%
Course Project Preliminary Submissions (Formative)	15%
TOTAL	100%

**Core Curriculum Competencies (CCCs are the competencies every graduate will develop):**

1. Apply clear and effective communication skills.
2. Use critical thinking to solve problems.
3. Collaborate to achieve a common goal.
4. Demonstrate professional and ethical conduct.
5. Use information literacy for effective vocational and/or academic research.
6. Apply quantitative reasoning and/or scientific inquiry to solve practical problems.

**Program Graduate Competencies (PGCs are the competencies every graduate will develop specific to his or her major):**

1. Estimate material quantities for technical projects.
2. Interpret and compile construction drawings and project manual.
3. Employ project management skills as they relate to constructions projects.
4. Use productivity software to develop a project record.
5. Demonstrate a commitment to quality, timeliness, professional development and continuous improvement.

**Disabilities Support Statement:**

The College is committed to providing reasonable accommodations for students with disabilities. Students are encouraged to schedule an appointment with the campus Disabilities Support Counselor to request an accommodation needed due to a disability. A listing of campus Disabilities Support Counselors and contact information can be found at the [disabilities services - https://www.dtcc.edu/disabilitysupport](https://www.dtcc.edu/disabilitysupport) web page or visit the campus Advising Center.