



El Camino College  
COURSE OUTLINE OF RECORD – Official

<b>Course Acronym:</b>	CTEC
<b>Course Number:</b>	150
<b>Descriptive Title:</b>	Contract Estimating
<b>Division:</b>	Industry and Technology
<b>Department:</b>	Construction Technology
<b>Course Disciplines:</b>	Construction Technology
<b>Catalog Description:</b>	This course is designed for those with construction backgrounds who desire to advance to a supervisory position or become contractors. Topics include: print reading, International Residential Code (IRC) requirements, quantity surveying and estimating, and basic financial statements.
<b>Prerequisite:</b>	
<b>Co-requisite:</b>	
<b>Recommended Preparation:</b>	Construction Technology 100 or Construction Technology 110 or equivalent
<b>Enrollment Limitation:</b>	
<b>Hours Lecture (per week):</b>	3
<b>Hours Laboratory (per week):</b>	0
<b>Outside Study Hours:</b>	6
<b>Total Course Hours:</b>	54
<b>Course Units:</b>	3
<b>Grading Method:</b>	Letter Grade only
<b>Credit Status:</b>	Credit, degree applicable
<b>Transfer CSU:</b>	Yes
<b>Effective Date:</b>	Prior to July 1992
<b>Transfer UC:</b>	
<b>Effective Date:</b>	
<b>General Education: ECC</b>	
<b>Term:</b>	
<b>Other:</b>	
<b>CSU GE:</b>	
<b>Term:</b>	
<b>Other:</b>	
<b>IGETC:</b>	

<b>Term:</b>	
<b>Other:</b>	
<b>Student Learning Outcomes:</b>	<p><b>SLO #1 Residential Construction Estimating</b></p> <p>Students will be able to demonstrate a basic knowledge of residential construction estimating.</p> <p><b>SLO #2 Window Estimate</b></p> <p>Students will be able to prepare a window estimate from information found on a set of residential blueprints.</p> <p><b>SLO #3 Building Estimate Profit</b></p> <p>Students will be able to calculate profit for a building estimate</p>
<b>Course Objectives:</b>	<ol style="list-style-type: none"> <li>1. Diagram a dimensioned plot plan, to the scale of 1/8" = 1' 0" from given data and information.</li> <li>2. Identify given architectural abbreviations and symbols.</li> <li>3. Identify the standard framing members that go into the construction single family dwelling.</li> <li>4. Interpret basic building plans and specifications.</li> <li>5. Arrange various dimensions as decimals or in feet and inches and convert from one means of expression to the other.</li> <li>6. Estimate amounts of cut and fill needed for various types of soil from plans and written descriptions.</li> <li>7. List the IRC minimum requirements for residential concrete foundations and walls, raised floors, framed walls, ceiling, and roof systems.</li> <li>8. Calculate the quantities and prepare estimates from working drawings and written descriptions for residential floor, wall, ceiling, and roof framing.</li> <li>9. Calculate the quantities and prepare estimates from working drawings and written descriptions for residential excavation and concrete work, interior and exterior wall coverings, insulation, and roofing materials.</li> <li>10. Compare and contrast a basic balance sheet and profit and loss statement.</li> <li>11. Collect and assemble printed materials and aids to be used in estimating and contracting.</li> </ol>
<b>Major Topics:</b>	<p><b>I. LICENSING (3 hours, lecture)</b></p> <ol style="list-style-type: none"> <li>A. Qualifications of applicant for a contractor's license</li> <li>B. Types of licenses and their scope of limitations</li> </ol> <p><b>II. BUILDING PLANS (10 hours, lecture)</b></p> <ol style="list-style-type: none"> <li>A. Zoning ordinances: land descriptions and use, variances, and easements</li> <li>B. Permits: plan check and inspection process</li> <li>C. Plot plan: building setbacks, utilities, contour lines, landscaping, and structure locations</li> <li>D. Foundation plan: access, plumbing, size and direction of floor framing members</li> <li>E. Floor plan: location of doors, windows, equipment and fixtures, cabinets, fireplace, and exterior walls</li> </ol>

- F. Elevations: roof slope and materials, floor and plate heights, exterior finish
- G. Sections and details: size and on center information for structural components
- H. "R Value" and location of insulation, special hardware
- I. Door, window and finish schedules
- J. Scaled architectural drawings and the use of the architectural scale

### **III. GENERAL CONDITIONS AND SPECIFICATIONS (7 hours, lecture)**

- A. General conditions: contracts, legal rights of all parties, permits, payment provisions, insurance, changes in work, miscellaneous provisions, and termination of the contract
- B. Specifications: quality of materials, workmanship, relations between the parties concerned with the job

### **IV. ESTIMATING EXCAVATION AND CONCRETE WORK (7 hours, lecture)**

- A. Volume, areas, perimeters, mensuration, circles
- B. Grading: cut and fill, soil compaction and swell factors, estimating excavation work
- C. Hardware used in connection with concrete foundations and flat work
- D. Estimating materials used in concrete work
- E. IRC minimum requirements

### **V. ESTIMATING RAISED FLOOR SYSTEMS (7 hours, lecture)**

- A. IRC minimum requirements
- B. Conventional floor system framing: girders and girder posts, mudsill, floor joists, rim joists, solid blocking, bridging, vent blocking, diagonal and plywood subfloors
- C. Quantity survey

### **VI. ESTIMATING ROOF FRAMING MEMBERS (7 hours, lecture)**

- A. IRC requirements
- B. Roof framing members: ridge, common, hip and valley rafters, jack and cripple jack rafters
- C. Equations for run, cut and rise
- D. Length of rafters by use of the Pythagorean theorem and by scaling
- E. Open beam roof construction
- F. Roof materials

### **VII. ESTIMATING WALL AND CEILING FRAMING MEMBERS (7 hours, lecture)**

- A. IRC requirements
- B. Platform framing: plates, studs, headers, wall bracing, fire blocking and ceiling joists
- C. Rake walls
- D. Quantity survey

### **VIII. ESTIMATING WALL COVERINGS AND INSULATION (3 hours, lecture)**

	<ul style="list-style-type: none"> <li>A. Drywall and interior plaster materials and methods</li> <li>B. Stucco and siding: materials and methods</li> <li>C. IRC requirements</li> </ul> <p><b>IX. OFFICE PROCEDURE (3 hours, lecture)</b></p> <ul style="list-style-type: none"> <li>A. Financial terms and ratios</li> <li>B. Financial statements: Balance Sheet and Profit and Loss Statement</li> <li>C. Bidding forms, practices and procedures</li> </ul>
<b>Total Lecture Hours:</b>	54
<b>Total Laboratory Hours:</b>	0
<b>Total Hours:</b>	54
<b>Primary Method of Evaluation:</b>	2) Problem solving demonstrations (computational or non-computational)
<b>Typical Assignment Using Primary Method of Evaluation:</b>	Given a set of working drawings, prepare a quantity take off for all wall framing members for a standard wall system. Compile a one-page written report with the estimated cost of materials and submit to the instructor.
<b>Critical Thinking Assignment 1:</b>	Given a balance sheet, determine current and fixed assets, current and fixed liabilities, net working capital, and owner's equity. Compile a one-page report summarizing the findings and submit to the instructor.
<b>Critical Thinking Assignment 2:</b>	Given a Profit and Loss Statement, determine direct and indirect costs, gross profit, overhead expenses, and net profit. Compile a one-page report summarizing the findings and submit to the instructor.
<b>Other Evaluation Methods:</b>	<ul style="list-style-type: none"> <li>Objective Exams</li> <li>Other Exams</li> <li>Quizzes</li> <li>Written Homework</li> <li>Homework Problems</li> <li>Term or Other Papers</li> <li>Multiple Choice</li> <li>Completion</li> <li>Other (specify): CONSTRUCTION ESTIMATING</li> </ul>
<b>Instructional Methods:</b>	<ul style="list-style-type: none"> <li>Demonstration</li> <li>Discussion</li> <li>Group Activities</li> <li>Guest Speakers</li> <li>Lecture</li> <li>Multimedia Presentations</li> </ul>
<b>If other:</b>	<ul style="list-style-type: none"> <li>Student presentations</li> <li>Internet Presentation/Resources</li> </ul>
<b>Work Outside of Class:</b>	<ul style="list-style-type: none"> <li>Study</li> <li>Required reading</li> <li>Problem solving activities</li> <li>Written work</li> </ul>

<b>If Other:</b>	
<b>Up-To-Date Representative Textbooks:</b>	International Code Council. DWELLING CONSTRUCTION UNDER THE INTERNATIONAL BUILDING CODE, 2015. DISCIPLINE STANDARD
<b>Alternative Textbooks:</b>	
<b>Required Supplementary Readings:</b>	
<b>Other Required Materials:</b>	Pocket calculator  Architectural scale  30-60-90 degree triangle
<b>Requisite:</b>	
<b>Category:</b>	
<b>Requisite course(s): List both prerequisites and corequisites in this box.</b>	
<b>Requisite and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s).</b>	
<b>Requisite Skill:</b>	
<b>Requisite Skill and Matching Skill(s): Bold the requisite skill(s). If applicable</b>	
<b>Requisite course:</b>	Construction Technology 100 or Construction Technology 110
<b>Requisite and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s).</b>	<b>Ability to Understand common construction terms.</b>  CTEC 110 - Identify structural framing members.  CTEC 110 - Identify and define a list of construction terms.  CTEC 100 - Identify and define a list of construction terms.  <b>Ability to read construction documents.</b>  CTEC 100 - Identify components in a structural Type V residential.  CTEC 110 - Interpret architectural blueprints.  CTEC 110 - Identify and analyze the procedures for submission of a building permit application.
<b>Requisite Skill:</b>	or equivalent

<b>Requisite Skill and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s). If applicable</b>	If a student has taken an equivalent course at another college or has basic construction experience, the student will be prepared to enroll in this course. It is recommended that students have some form of basic construction experience to enhance success in this course.
<b>Enrollment Limitations and Category:</b>	
<b>Enrollment Limitations Impact:</b>	
<b>Course Created by:</b>	Tim Meza
<b>Date:</b>	09/01/1987
<b>Original Board Approval Date:</b>	
<b>Last Reviewed and/or Revised by:</b>	ROSS DURAND
<b>Date:</b>	03/21/2022
<b>Last Board Approval Date:</b>	06/20/2022