



## COURSE OUTLINE: ARC101 - BLDG/CONST ESTIMATE

Prepared: Marc Pilon, MBA, P.Eng, C.E.T, PMP

Approved: Martha Irwin - Dean

<b>Course Code: Title</b>	ARC101: BUILDING & CONSTRUCTION ESTIMATING
<b>Program Number: Name</b>	4080: CIVIL ENG TECHNICIAN 4098: CONSTRUCTION TECH.
<b>Department:</b>	CIVIL/CONSTRUCTION
<b>Academic Year:</b>	2025-2026
<b>Course Description:</b>	This course introduces the student to the fundamental principles of construction estimating. The topics covered will deal with the measurement of construction work, reading construction documents (prints and specifications) as well as records management. Emphasis is placed on estimating site work, concrete, masonry, steel and wood, using detailed and systematic methods. Computer-based spreadsheets will be used to prepare estimates and assignments. Students will learn to assemble and sort estimate information for a complex project in a logical and manageable manner and develop organizational and time management skills. Students will also become familiar with issues relating to construction waste management and reduction as well as environmental controls as it relates to construction estimating.
<b>Total Credits:</b>	5
<b>Hours/Week:</b>	4
<b>Total Hours:</b>	56
<b>Prerequisites:</b>	There are no pre-requisites for this course.
<b>Corequisites:</b>	There are no co-requisites for this course.
<b>Substitutes:</b>	OEL1014
<b>Vocational Learning Outcomes (VLO's) addressed in this course:</b>	<b>4080 - CIVIL ENG TECHNICIAN</b>
<b>Please refer to program web page for a complete listing of program outcomes where applicable.</b>	VLO 1 develop and use strategies to enhance professional growth and ongoing learning in the civil engineering field.
	VLO 4 carry out sustainable practices in accordance with contract documents, industry standards and environmental legislative requirements.
	VLO 5 collaborate with the project team and communicate effectively with project stakeholders to support civil engineering projects.
	VLO 7 use industry-specific electronic and digital technologies to support civil engineering projects.
	VLO 9 assist in the scheduling, cost estimation and monitoring of the progression of civil engineering projects by applying principles of construction project management.
<b>Essential Employability Skills (EES) addressed in this course:</b>	EES 1 Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience. EES 3 Execute mathematical operations accurately. EES 4 Apply a systematic approach to solve problems.



	<p>EES 5 Use a variety of thinking skills to anticipate and solve problems.</p> <p>EES 6 Locate, select, organize, and document information using appropriate technology and information systems.</p> <p>EES 7 Analyze, evaluate, and apply relevant information from a variety of sources.</p>										
<b>Course Evaluation:</b>	<p>Passing Grade: 50%, D</p> <p>A minimum program GPA of 2.0 or higher where program specific standards exist is required for graduation.</p>										
<b>Other Course Evaluation &amp; Assessment Requirements:</b>	<p>Attendance</p> <p>Students are only allowed to miss three classes without a documented explanation. One mark will be deducted from your overall grade for each undocumented explanation. The maximum deduction in overall grade is not to exceed 15%. Valid documented explanation include:</p> <ul style="list-style-type: none"> <li>• Medical reason</li> <li>• Family emergency</li> <li>• Child care issue</li> <li>• Transportation problems</li> <li>• And any other reasonable explanation</li> </ul> <p>The documented explanation has to be sent to me by e-mail no later than three days from a missed class. A Doctor note, etc., is to be attached as a PDF file to your e-mail.</p>										
<b>Books and Required Resources:</b>	<p>RS Means Online Database Student Subscription  <a href="https://www.rsmeans.com/products/online">https://www.rsmeans.com/products/online</a></p>										
<b>Course Outcomes and Learning Objectives:</b>	<table border="1"> <thead> <tr> <th><b>Course Outcome 1</b></th> <th><b>Learning Objectives for Course Outcome 1</b></th> </tr> </thead> <tbody> <tr> <td>1. Carry out sustainable practices in accordance with contract documents, industry standards and environmental legislative requirements.</td> <td>           1.1 Identify legislative requirements for compliance with environmental protection regulations            1.2 Identify various types of contamination and environmental risks (groundwater contamination, soil erosion, pollutants, noise etc., and associated remediation techniques.            1.3 Identify sustainable practices across building and infrastructure life cycle processes and rehabilitation/renewal practices.            1.4 Minimize waste and use appropriate waste management techniques.            1.5 Identify content and function of bid forms, instructions, and contracts.            1.6 Apply waste reduction strategies in cost estimating workflows         </td> </tr> <tr> <th><b>Course Outcome 2</b></th> <th><b>Learning Objectives for Course Outcome 2</b></th> </tr> <tr> <td>2. Collaborate with the project team and communicate effectively with project stakeholders to support civil engineering projects.</td> <td>           2.1 Identify the relationships among the various disciplines involved in civil engineering and construction projects.            2.2 Work in groups to develop estimates in accordance with drawings and specifications.         </td> </tr> <tr> <th><b>Course Outcome 3</b></th> <th><b>Learning Objectives for Course Outcome 3</b></th> </tr> </tbody> </table>	<b>Course Outcome 1</b>	<b>Learning Objectives for Course Outcome 1</b>	1. Carry out sustainable practices in accordance with contract documents, industry standards and environmental legislative requirements.	1.1 Identify legislative requirements for compliance with environmental protection regulations 1.2 Identify various types of contamination and environmental risks (groundwater contamination, soil erosion, pollutants, noise etc., and associated remediation techniques. 1.3 Identify sustainable practices across building and infrastructure life cycle processes and rehabilitation/renewal practices. 1.4 Minimize waste and use appropriate waste management techniques. 1.5 Identify content and function of bid forms, instructions, and contracts. 1.6 Apply waste reduction strategies in cost estimating workflows	<b>Course Outcome 2</b>	<b>Learning Objectives for Course Outcome 2</b>	2. Collaborate with the project team and communicate effectively with project stakeholders to support civil engineering projects.	2.1 Identify the relationships among the various disciplines involved in civil engineering and construction projects. 2.2 Work in groups to develop estimates in accordance with drawings and specifications.	<b>Course Outcome 3</b>	<b>Learning Objectives for Course Outcome 3</b>
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	3. Use industry-specific electronic and digital technologies to support civil engineering projects.	3.1 Identify the impact and application of technology throughout the lifecycle of civil engineering and construction projects , i.e., field data collection, design and engineering, estimating and construction. 3.2 Select and use industry specific electronic and digital technologies to design projects, produce plans and solve project related problems (e.g., CAD, spreadsheet software). 3.3 Develop and format estimating workbooks and templates for building systems
	<b>Course Outcome 4</b>	<b>Learning Objectives for Course Outcome 4</b>
	Upon successful completion, the student will be able to: 4. Assist in the scheduling, cost estimation and monitoring of the progression of civil engineering projects by applying principles of construction project management.	4.1 Identify the phases of the project and their component activities. 4.2 Follow project schedules and cost estimates needed to complete each phase of work. 4.3 Assist in the identification of problems related to materials, scheduling, resources and budgets. 4.4 Perform quantity surveys and assist in cost estimates. 4.5 Use organizational and time management strategies effectively in own work. 4.6 Assist in preparing and presenting formal technical reports, budget forecasts and project estimates. 4.7 Provide technical information for the development of a project schedule. 4.8 Understanding of office and staff overheads. 4.9 Understanding of earthworks, concrete, steel, wood, and finished estimating. 4.10 Estimate material quantities for wood frame, concrete, steel, masonry and thermal systems. 4.11 Use plane geometry and volume formulas to calculate material quantities. 4.12 Perform unit conversions and apply math in civil estimating
	<b>Course Outcome 5</b>	<b>Learning Objectives for Course Outcome 5</b>
	5. Develop and use strategies to enhance professional growth and ongoing learning in the civil engineering field	5.1 Identify critical labour and material elements to compiling cost estimates 5.2 Understand how Production Rates effect civil engineering construction projects

**Evaluation Process and Grading System:**

Evaluation Type	Evaluation Weight
Assignments and Activities	60%
Final Test	20%
Mid-term Test	20%

**Date:**

July 31, 2025

**Addendum:**

Please refer to the course outline addendum on the Learning Management System for further information.

